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APPENDIX G
PSYCHOMETRIC PROPERTIES AND DESCRIPTION OF
INSTRUMENTS USED FOR THE PARTICIPANT SURVEYS

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Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
Contextual Characteristics						
<i>WIC experience:</i> Length on WIC, number of people in household on WIC	WIC ITFPS-2, modified	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested
<i>Produce availability:</i> Easy/expensive to purchase FV where I live	PA and Food Environment Survey (Boehmer, 2006)	Mostly female, middle-aged; non-Hispanic White	Telephone administered	Test-retest reliability performed (values not given)	Not tested	Availability not found to be related to obesity, but distance to nearest supermarket associated with greater obesity risk
<i>Participant's/mother's characteristics:</i> Marital status; race; Hispanic or Latino; languages spoken; pregnancy status	NHANES Demographics Questionnaire	General U.S. population; Spanish and English speaking	Interviewer administered	Not tested	Not tested	NA
<i>Participant's/mother's characteristics:</i> Prior BF experience	WIC ITFPS-2, modified	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
<i>Participant's/mother's characteristics:</i> Education	FITS 2002 answer choices from U.S. census, modified (Ziegler, 2006)	English-speaking mothers of infants and toddlers	Telephone administered	Not tested	Cognitive testing	NA
<i>Participant's/mother's characteristics:</i> Employment status working for pay FT or PT	WIC NEFPI (Ritchie, 2010) modified	Low-income mothers (WIC)	Telephone administered	Pilot tested but reliability not reported	Not tested	NA
<i>Participant's/child's characteristics:</i> Time spent in child care	WIC ITFPS-2, modified	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested
<i>Other programs:</i> SNAP, Head Start, Medicaid, TANF, Food Pantry	WIC ITFPS-2, modified	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested
<i>Social support:</i> Support for healthy eating and PA	PACE (Calfas, 2002) modified	18 to 65 yo adults in diverse settings	Telephone or self-administered	Spearman's [rho] clustered around 0.8 for the 8 versions of the IPAQ	Criterion validity had a median [rho] of about 0.30 for the versions of the IPAQ	Not tested

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
Behavioral Antecedents						
<i>Readiness for change:</i> Serving/eating more FV, low-fat milk, WG	WIC NEFPI (Ritchie, 2010)	Low-income mothers (WIC)	Telephone administered	Pilot tested but reliability not reported	Not tested	Significant differences measured between time 1 and 2 (6 mo) in recognition of education messages and stages of change for dietary behaviors (percent increases ranged from ~3 to 40% for recognition items)
<i>Readiness for change:</i> BF intentions I am planning to formula feed/breast feed up to 6 mo	Infant Feeding Intentions Scale (Nommsen-Rivers, 2009)	White, Black; Asian; English and non-English speaking Hispanic expecting mothers	Self-administered	Internal consistency: Cronbach's alpha ranged 0.7 to 0.85 for initiation and 0.9 to 0.93 for continuation factors	Construct validity: Significant association ($p < .0001$) with IFI factors and actual breastfeeding duration	See construct validity
<i>Enjoyment:</i> Mother or child liking FV, LF or NF milk, WG	PACE (Calfas, 2002)	18 to 65 yo adults in diverse settings	Telephone or self-administered	Spearman's [rho] clustered around 0.8 for the 8 versions of the IPAQ	Criterion validity had a median [rho] of about 0.30 for the versions of the IPAQ	Not tested

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
<i>Self-efficacy:</i> I can eat/serve ... FV/LF milk/WG; breastfeed	(Baranowski, 2010) modified	6 th grade students; 50% Hispanic, 25% Black, 25% White; majority from families with a high school education or lower	Self-administered	Cronbach's alpha: ≥0.84 for FV items	Criterion validity tested between SE and actual intake (range: 0.02–0.2); suggests low correlation with intake	Little variance; showed no correlation with FV intake
Food Acquisition and Management						
<i>Food security:</i> Worried about food running out, food bought didn't last	USDA Household Food Security Survey Module— subset (Hager, 2010)	Caregivers of 0 to 3 yo; residing in urban population; 23% food insecure; majority Black or Hispanic	Self-administered	Not tested	<i>Convergent validity:</i> Items associated with increased risk of reported poor/fair child health, lifetime hospitalizations, and develop- mental risk	Items have a 97% sensitivity compared to U.S. Household Food Security Scale
<i>Use of food labels:</i> Reading nutrition labels, planning meals, using Nutrition Facts	EFNEP ERS Behavior Checklist (Hersey, 2001) modified	Low-income women (homemakers) participating in EFNEP	Self-administered	Not tested	Content validity established with focus groups	Demonstrated behavior change in participants receiving EFNEP education; participants that scored higher on food planning items were more likely to meet 100% RDA of nutrients

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
<i>Purchase/use of WIC food package:</i> Use of vouchers for LF milk, WG, FV purchase of WIC foods	WIC ITFPS-2	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested
<i>Meal planning:</i> Planning meals ahead of time, cooking meals from scratch, planning meals, using Nutrition Facts	EFNEP ERS Behavior Checklist (Hersey, 2001) modified	Low-income women (home makers) participating in EFNEP	Self-administered	Not tested	Content validity established with focus groups	Demonstrated behavior change in participants receiving EFNEP education; participants that scored higher on food planning items were more likely to meet 100% RDA of nutrients
Eating and Child Feeding Practices						
<i>Eating breakfast:</i> Frequency of eating breakfast	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested
<i>Shared mealtime:</i> Frequency of meals w/family My child eats in front of TV; I sit and eat with child; my child is picky	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
<i>Eating out/fast food:</i> Frequency of meals prepared away from home, fast food, eating away from home/fast food	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested
<i>Eating meals with TV:</i> Frequency of eating meal while watching TV	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested
<i>Child feeding:</i> Tracking child's intake; feeding habits and responsiveness; keep track of child eating; try to get child to finish food, eat when not hungry; control what child eats; encourage child to eat; allow to eat sweets to keep happy	(Thompson et al., 2009)	Low-income African American mothers of children aged 3 to 20 mo participating in WIC	Self-administered	Internal reliability of subconstructs ranged from 0.75–0.9	<i>Convergent validity (confirmatory factor analysis)</i> responses to feeding style questions significantly corresponded to latent measures of obesity	Not tested

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
<i>Child feeding:</i> Offering new foods, how many times offer child a food before deciding child doesn't like	FITS 2002 (Ziegler, 2002) modified	English-speaking mothers of infants and toddlers	Telephone administered	Not tested	Cognitive testing	NA
<i>Child feeding:</i> Feeding habits and responsiveness; picky eating	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested
<i>Infant feeding:</i> BF initiation, duration, exclusivity; formula feeding; feeding on schedule vs. on demand	WIC ITFPS-2, modified	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested
<i>Infant feeding:</i> Formula feeding	LA County WIC Survey (Davis, 2012) modified	Low-income mothers (WIC)	Telephone administered	Not tested	Cognitive testing	Not tested
<i>Infant feeding practices:</i> Introduction of other foods/ beverages breastfeeding cessation	WIC IFPS-1 (Baydar, 1997)	Low-income mothers (WIC)	Telephone administered	Not tested	Cognitive testing	NA

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
<i>Infant feeding practices:</i> Introduction of other foods/ beverages Initiation of formula	FITS (Ziegler, 2006)	English-speaking mothers of infants and toddlers	Telephone administered	Not tested	Cognitive testing	NA
<i>Infant feeding practices:</i> Introduction of other foods/ beverages	LA County WIC Survey (Davis, 2012)	Low-income mothers (WIC)	Telephone administered	Not tested	Cognitive testing	Not tested
<i>Infant feeding practices:</i> Introduction of other foods/ beverages	WIC ITFPS-2, modified	Low-income mothers (WIC)	Telephone administered	Not tested	Not tested	Not tested

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
Dietary Habits						
<i>Mother's/child's dietary intake:</i> Frequency of intake in past 30 days of ... FV, WG, dairy, SSBs, added sugar, type of milk Intake of cereal, milk, sweetened beverages, FV, beans, cheese, WG, sweets	NHANES 2009-2010 Dietary Screener (NCI Self-administered version)	General U.S. population both English and Spanish speaking	NCI self-administered	Not tested	Cognitive testing; usual food group intake patterns correlate with mean intake of food groups recorded in 24-hour recall (Subar, 2006)	Not tested
<i>Mother's/child's dietary intake:</i> Type of milk consumed in the past 30 days	WIC NEFPI (Ritchie, 2010),	Low-income mothers (WIC)	Telephone administered	Pilot tested but reliability not reported	Not tested	Significant changes measured between time points in the type of milk usually consumed (6.8% less whole milk and more lower-fat milk usually consumed)

(continued)

Exhibit G-1. Psychometric Properties and Description of Instruments Used for the Participant Surveys (continued)

Measure (Questions)	Instrument (Source)	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
Physical Activity						
<i>Mother's/child's physical activity:</i> Mother: Amount in last 7 days of moderate to vigorous activity	IPAQ (Craig, 2003) modified	18 to 65 yo adults in diverse settings	Telephone or self-administered	Spearman's [rho] clustered around 0.8 for the 8 versions of the IPAQ	Criterion validity had a median [rho] of about 0.30 for the versions of the IPAQ	Not tested
<i>Mother's/child's physical activity:</i> Child: days/hours of outside play Child plays outside; I play outside with child; child watches TV/plays games	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested
<i>Mother's/child's sedentary activity:</i> Mother: Usual amount of TV/DVD in a day; Child: Usual amount of TV/DVD/computer game/week, how many days engaged in activity; hours of TV watched	Healthy Kids Survey (Townsend, 2011; Townsend et al., 2014)	Parents of 3 to 5 yo participating in Head Start, low literacy level	Self-administered	Not available	Validated for face validity	Not tested

Notes: FV = fruit and vegetables, WG = whole grains, BF = breastfeeding, SSB = sugar-sweetened beverages, LF = low fat, NF = nonfat

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APPENDIX H
DATA COLLECTION FOR THE PARTICIPANT SURVEYS

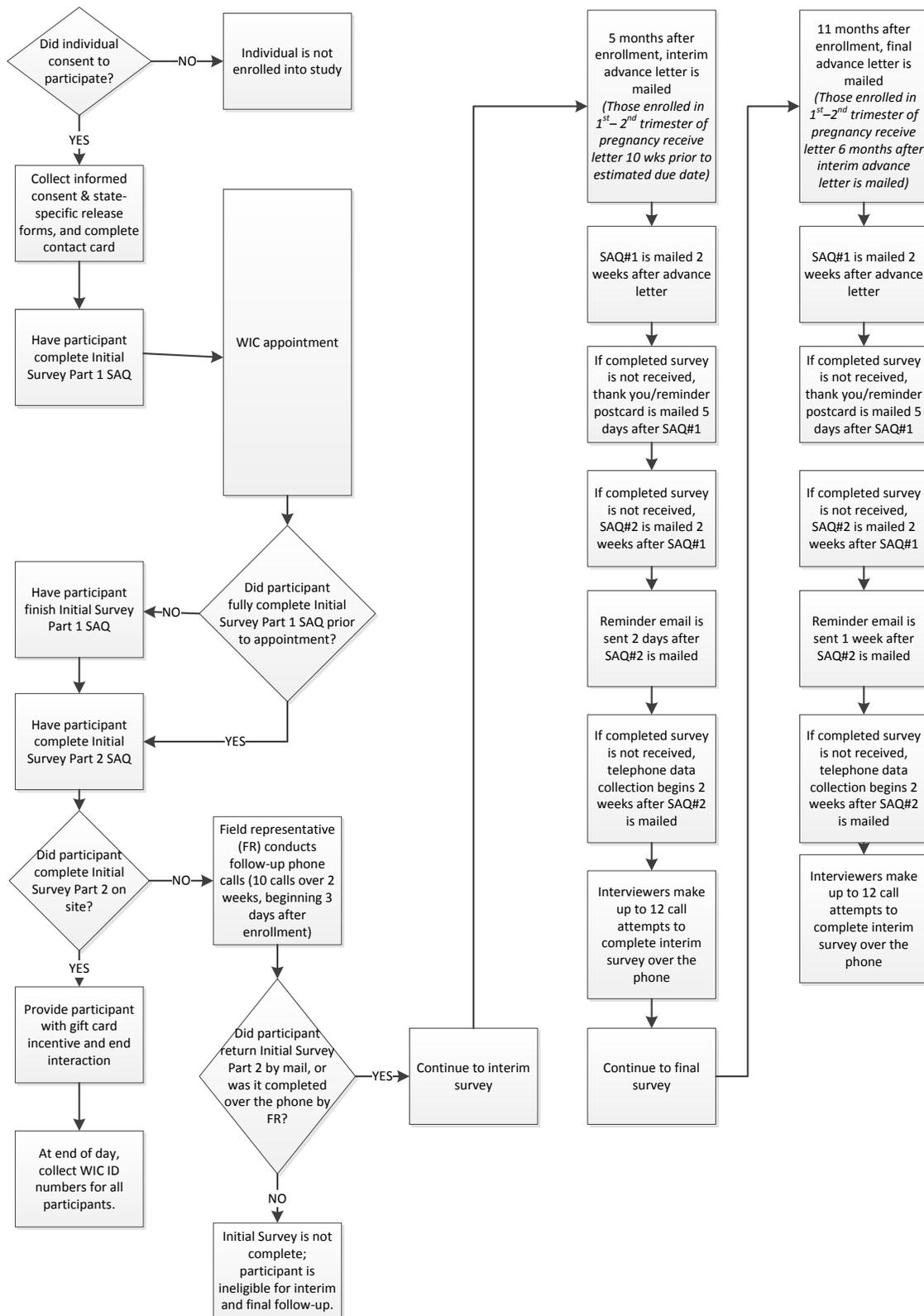
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Appendix H provides additional detail on the initial, interim, and final data collection for the Participant Surveys by site and enrollment group.

H.1 Initial Data Collection

Exhibit H-1 shows the step-by-step flow and processes for the initial, interim, and final data collection. With a few exceptions, all data collection activities for the initial survey were conducted at the WIC site. Because of time constraints, 13 enrolled women completed enrollment and the initial Part 1 survey onsite, but they elected to take the initial Part 2 survey home to complete. These women were provided the initial Part 2 survey along with a postage-paid return envelope for returning the completed survey. They were also given the option of returning the completed survey to the site at any time until the end of initial data collection and were informed that field representatives would contact them by telephone within a few days to ask if they had returned their survey.

Exhibit H-1. Flow of Initial, Interim, and Final Data Collection Efforts



Note: SAQ = self-administered questionnaire

Exhibit H-2 shows initial survey completion results broken down by site and enrollment group. The 13 participants who took their Part 2 survey home were contacted by phone per the initial protocol. Field representatives first attempted to reach the participants 3 days after enrollment. Participants were prompted to return the survey by mail and, if reluctant, or reported lost, they were given the option of completing Part 2 over the phone with the field representative or having another copy of the survey mailed to them. None of the 13 participants opted to complete the survey over the phone, and no one requested a replacement survey.

Exhibit H-2. Initial Survey Status Report by Site

Initial Survey Administered	A	B	C	D	E	F	Total
<i>Completed Parts 1 and 2 onsite</i>	145	136	140	135	140	143	839
Pregnant	25	28	31	19	25	26	154
Postpartum	42	33	27	20	40	19	181
Caregiver with child	78	75	82	96	75	98	504
<i>Completed Part 1 onsite, Part 2 by mail</i>	0	0	1	0	0	2	3
Pregnant	0	0	0	0	0	0	0
Postpartum	0	0	0	0	0	1	1
Caregiver with child	0	0	1	0	0	1	2
<i>Completed Part 1 but not Part 2 (Nonrespondent)</i>	5	0	2	3	0	0	10
Total Completed Initial Surveys	145	136	141	135	140	145	842
Pregnant	25	28	31	19	25	26	154
Postpartum	42	33	27	20	40	20	182
Caregiver with child	78	75	83	96	75	99	506

The data collection manager communicated with field supervisors who continued to relay the status of the take-home surveys (i.e., regardless of whether they had been received by mail), and, for all that were not returned, field representatives continued to call up to a maximum of 10 times for 2 weeks after enrollment. Field representatives left recorded voice messages when possible if no one answered the phone, prompting for returned surveys and reminding participants that the survey had to be postmarked by August 28 in order for them to be eligible to receive their \$20 gift card. Only three of the initial Part 2 surveys were returned by mail; the remaining 10 participants were counted as nonrespondents because they completed only one part of the survey.

Another challenge noted for initial data collection, also related to time constraints of data collection onsite, was the ability to complete screening, enrollment, and initial Part 1 before the participant was called to his or her appointment. Completion of Part 1 before the participant’s appointment was of particular interest to avoid “priming” of initial responses

related to nutrition education. To assist in the analysis of potential bias, data collectors were instructed to record the “stopping point” of data collection, or the point in the process where the participant was when called for the appointment.

A summary of the stopping point data is shown in **Exhibit H-3**. As shown, about half of all participants completed all of Part 1 before being called for their appointment. The completion rate for finishing Part 1 before the appointment varies by site because the procedures used by sites to schedule appointments is different and the receptivity of sites to allow for completion of Part 1 before the appointment varied. If it is important in a national study to complete Part 1 of the survey before the participant’s appointment, changes may be needed to increase the efficiency and reduce the time for recruitment and/or enrollment procedures, possibly in addition to shortening the Part 1 survey. Also important to note is that the stopping point before the WIC appointment is unknown in approximately 3% of cases. This information is missing largely because of confusion among field representatives regarding how to record the information on the Contact Card. These issues could be addressed in future studies by reformatting the Contact Card and providing clearer, more in-depth instruction during training and on the form. Electronic data collection may also alleviate such problems, because time and date stamps could be included for each item or step. Additionally, electronic data collection would minimize reporting errors and may help reduce survey burden.

Exhibit H-3. Stopping Point before WIC Appointment by Site

Stopping Point Before WIC Appointment	A	B	C	D	E	F	Total
Recruitment (all activities took place after the appointment)	29	0	0	143	0	4	176
Screener	6	45	26	0	30	5	112
Contact Card	26	4	2	0	12	1	45
Part 1 partial	27	20	4	0	23	8	82
Part 1 complete	55	69	108	0	77	125	434
Not known	10	4	7	0	5	3	29
Total	153	142	147	143	147	146	878
Completion Rate for Finishing Part 1 Before Appointment: Part 1 Complete/(Total – Not Known)	38%	50%	77%	0%	54%	87%	51%

H.2 Cooperation Rates for Participant Surveys by Site and Enrollment

Exhibit H-4 summarizes the cooperation rates for the Participant Surveys by site and enrollment group. The remaining sections provide additional information on the interim and final survey data collection, in particular information on response by mail versus telephone.

Exhibit H-4. Cooperation Rates for Participant Surveys by Site and Enrollment Group

Site	Enrollment Group	Completed Initial	Total Refusals/ Cooperation Rate ^a			Total Refusals/ Cooperation Rate ^a		
			Total Completes Interim	Closed Cases Interim	Cooperation Rate ^a Interim	Total Completes Final	Closed Cases Final	Cooperation Rate ^a Final
A	Pregnant	25	17	8	68.0%	12	13	48.0%
	Postpartum	42	25	17	59.5%	21	21	50.0%
	Caregiver with child	78	45	33	57.7%	42	36	53.8%
	A Totals	145	87	58	60.0%	75	70	51.7%
B	Pregnant	28	17	10	60.7%	8	20	28.6%
	Postpartum	33	20	13	60.6%	16	17	48.5%
	Caregiver with child	75	54	21	72.0%	50	25	66.7%
	B Totals	136	91	44	66.9%	74	62	54.4%
C	Pregnant	31	19	12	61.3%	11	20	35.5%
	Postpartum	27	18	9	66.7%	14	13	51.9%
	Caregiver with child	83	54	28	65.1%	43	40	51.8%
	C Totals	141	91	49	64.5%	68	73	48.2%
D	Pregnant	19	14	5	73.7%	9	10	47.4%
	Postpartum	20	9	11	45.0%	9	11	45.0%
	Caregiver with child	96	68	28	70.8%	54	42	56.2%
	D Totals	135	91	44	67.4%	72	63	53.3%
E	Pregnant	25	14	11	56.0%	14	11	56.0%
	Postpartum	40	25	15	62.5%	17	23	42.5%
	Caregiver with child	75	42	33	56.0%	36	39	48.0%
	E Totals	140	81	59	57.9%	67	73	47.9%
F	Pregnant	26	21	5	80.8%	15	11	57.7%
	Postpartum	20	13	7	65.0%	12	8	60.0%
	Caregiver with child	99	75	24	75.8%	70	29	70.7%
	F Totals	145	109	36	75.2%	97	48	66.9%
Pregnant Total		154	102	51	66.2%	69	85	44.8%
Postpartum Total		182	110	72	60.4%	89	93	48.9%
Caregiver with Child Total		506	338	167	66.8%	295	211	58.3%
Grand Total		842	550	290	65.3%	453	389	53.8%

^a Cooperation rate = Total completes/Completed initial

H.3 Interim Survey Data Collection

The interim survey procedures included sending a postcard to sample members approximately 5 days after the initial mailing. The postcard served as a thank you to sample members who had already completed the survey and a reminder to those who had not yet completed the survey. Nonresponders to the first SAQ for which a good address was available were mailed a second SAQ approximately 2 weeks after the first SAQ was mailed (n = 584).¹ For sample members with an email address, an email was sent approximately 2 days after the second SAQ was mailed to alert them to the forthcoming second SAQ.

As shown in **Exhibit H-5**, a total of 550 interim surveys were completed; 457 participants completed the interim survey by responding to the mailed SAQ and 93 participants completed the interim survey by CATI. For surveys completed by mail, this number represents 87% of the completed interim cases (457/550). It should be noted that 27% of the SAQ completes (n = 123) were not received until after telephone nonresponse follow-up had been initiated. Once a completed SAQ for a case that was being followed up by telephone was received, the case was finalized and not called again.

Exhibit H-5. Interim Cases by Data Collection Mode, Site, and Enrollment Group

Site	Enrollment Group	Completed Initial	Interim Completed by Mail	Interim Completed by Phone	Total Completes for Interim	Total Refusals/ Closed Cases for Interim	Cooperation Rate for Interim ^a
A	Pregnant	25	12	5	17	8	68.0%
	Postpartum	42	19	6	25	17	59.5%
	Caregiver with child	78	37	8	45	33	57.7%
	Site A Totals	145	68	19	87	58	60.0%
B	Pregnant	28	12	5	17	10	60.7%
	Postpartum	33	19	1	20	13	60.6%
	Caregiver with child	75	45	9	54	21	72.0%
	Site B Totals	136	76	15	91	44	66.9%
C	Pregnant	31	15	4	19	12	61.3%
	Postpartum	27	16	2	18	9	66.7%
	Caregiver with child	83	45	9	54	28	65.1%
	Site C Totals	141	76	15	91	49	64.5%

(continued)

¹ For 47 sample members, the advance letter was returned as undeliverable, and for 53 sample members, the first SAQ was returned as undeliverable. When an undeliverable item was received, subsequent mailings were not sent to that address again.

Exhibit H-5. Interim Cases by Data Collection Mode, Site, and Enrollment Group (continued)

Site	Enrollment Group	Completed Initial	Interim Completed by Mail	Interim Completed by Phone	Total Completes for Interim	Total Refusals/ Closed Cases for Interim	Cooperation Rate for Interim ^a
D	Pregnant	19	11	3	14	5	73.7%
	Postpartum	20	8	1	9	11	45.0%
	Caregiver with child	96	57	11	68	28	70.8%
	Site D Totals	135	76	15	91	44	67.4%
E	Pregnant	25	14	0	14	11	56.0%
	Postpartum	40	20	5	25	15	62.5%
	Caregiver with child	75	37	5	42	33	56.0%
	Site E Totals	140	71	10	81	59	57.9%
F	Pregnant	26	16	5	21	5	80.8%
	Postpartum	20	11	2	13	7	65.0%
	Caregiver with child	99	63	12	75	24	75.8%
	Site F Totals	145	90	19	109	36	75.2%
Pregnant Total		154	80	22	102	51	66.2%
Postpartum Total		182	93	17	110	72	60.4%
Caregiver with Child Total		506	284	54	338	167	66.8%
Grand Total		842	457	93	550	290	65.3%

^a Cooperation rate = Total completes/Completed initial

Exhibit H-6 provides the results of the interim mail survey by site and enrollment group. Mail survey cooperation rates varied by site and ranged from 47 to 62%. Cooperation rates for women enrolled in the pregnant (52%) and postpartum groups (51%) were about the same; the cooperation rate for the caregiver with child group was 56%.

Exhibit H-6. Interim Mail Survey (SAQ) Results by Site and Enrollment Group

Site	Enrollment Group	Completed Initial	Eligible for Interim ^a	Mailed SAQ1	Mailed SAQ2	Completed by Mail	Cooperation Rate for Mail Survey ^b
A	Pregnant	25	25	25	17	12	48.0%
	Postpartum	42	42	42	28	19	45.2%
	Caregiver with child	78	78	78	50	37	47.4%
	A Totals	145	145	145	95	68	46.9%

(continued)

**Exhibit H-6. Interim Mail Survey (SAQ) Results by Site and Enrollment Group
(continued)**

Site	Enrollment Group	Completed Initial	Eligible for Interim ^a	Mailed SAQ1	Mailed SAQ2	Completed by Mail	Cooperation Rate for Mail Survey ^b
B	Pregnant	28	27	27	23	12	42.9%
	Postpartum	33	33	33	23	19	57.6%
	Caregiver with child	75	75	75	55	45	60.0%
	B Totals	136	135	135	101	76	55.9%
C	Pregnant	31	31	31	25	15	48.4%
	Postpartum	27	27	26	13	16	59.3%
	Caregiver with child	83	82	81	64	45	54.2%
	C Totals	141	140	138	102	76	53.9%
D	Pregnant	19	19	19	16	11	57.9%
	Postpartum	20	20	20	18	8	40.0%
	Caregiver with child	96	96	96	66	57	59.4%
	D Totals	135	135	135	100	76	56.3%
E	Pregnant	25	25	25	17	14	56.0%
	Postpartum	40	40	40	28	20	50.0%
	Caregiver with child	75	75	75	47	37	49.3%
	E Totals	140	140	140	92	71	50.7%
F	Pregnant	26	26	26	20	16	61.5%
	Postpartum	20	20	19	10	11	55.0%
	Caregiver with child	99	99	98	64	63	63.6%
	F Totals	145	145	143	94	90	62.1%
Pregnant Total		154	153	153	118	80	51.9%
Postpartum Total		182	182	180	120	93	51.1%
Caregiver with Child Total		506	505	503	346	284	56.1%
Grand Total		842	840	836 ^c	584	457	54.3%

^a To be eligible for the interim wave, it was necessary for the sample member to have contact information (phone or mailing address). Contact information was not available for two sample members.

^b Cooperation rate for mail survey = Completed by mail/Completed initial

^c Four cases were not loaded into the control system in error, so they did not have an opportunity to participate in the interim wave; however, they had the opportunity to participate in the final wave.

Sample members were added to the queue for telephone nonresponse follow-up when the completed SAQ was not received by the “target completion date” for the individual sample member. Target completion dates were based on the schedule for each enrollment group, with women who were pregnant and in their first or second trimester at enrollment having a target completion date of 1 month before their expected due date and remaining sample members having a target completion date of 6 months after enrollment. For the interim wave, 505 cases (60% of eligible cases) were initiated into CATI for telephone nonresponse follow-up.

Each sample member was contacted up to 12 times before finalizing the case. Call attempts were monitored to ensure all cases were called on different days of the week and at different times of day, including evenings and weekends in addition to weekday hours. Call attempts were made approximately every 2 days, although in some instances (i.e., when the individual who answered initially refused or hung up or if the participant indicated that they completed their survey and had mailed it or was going to mail it back), a week delay was implemented before call attempts were resumed.

Of the nonresponse cases called, 93 were completed by telephone, which represents an 18% completion rate among cases initiated in CATI (93/505) and 17% of all completed cases for the interim data collection period (93/550). CATI cases that were not completed by phone either were completed by mail (returned SAQ) after being initiated into CATI (n = 123) or were finalized as partial or incomplete after all mail and telephone efforts were exhausted (n = 290). **Exhibit H-7** shows the final dispositions of the 505 CATI cases.

Exhibit H-7. Final Dispositions for Interim Wave Nonresponse Phone Follow-Up (CATI)

Finalized/Completed	Number
Final Unlocatable	
Unlocatable after tracing	24
Finalized after 10 call attempts	232
Subtotal	256
Final Contacting	
Out of country	1
Subtotal	1
Final Refusals	
Final refusal (verbally declined to complete survey)	22
Subtotal	22
Final Completes	
Partial interview (started survey but did not complete through at least Question 30)	10
Complete	93
Completed by mail after being loaded into CATI	123
Subtotal	226
Final Cases Total	505

Exhibit H-8 provides the results of the interim phone follow-up by site and enrollment group. Phone follow-up cooperation rates varied by site and ranged from 12 to 26%. Cooperation rates also varied by enrollment group with 22% for the pregnant group, 19% for the caregiver with child group, and 15% for the postpartum group.

Exhibit H-8. Interim Phone (CATI) Follow-Up by Site and Enrollment Group

Site	Enrollment Group	Completed Initial	Eligible for Interim ^a	CATI Initiated	Completed by Phone	Cooperation Rate for Phone Follow-Up ^b
A	Pregnant	25	25	14	5	35.7%
	Postpartum	42	42	29	6	20.7%
	Caregiver with child	78	78	48	8	16.7%
	A Totals	145	145	91	19	20.9%
B	Pregnant	28	27	22	5	22.7%
	Postpartum	33	33	20	1	5.0%
	Caregiver with child	75	75	44	9	20.5%
	B Totals	136	135	86	15	17.4%
C	Pregnant	31	31	22	4	18.2%
	Postpartum	27	27	14	2	14.3%
	Caregiver with child	83	82	54	9	16.7%
	C Totals	141	140	90	15	16.7%
D	Pregnant	19	19	9	3	33.3%
	Postpartum	20	20	16	1	6.3%
	Caregiver with child	96	96	58	11	19.0%
	D Totals	135	135	83	15	18.1%
E	Pregnant	25	25	16	0	0.0%
	Postpartum	40	40	24	5	20.8%
	Caregiver with child	75	75	42	5	11.9%
	E Totals	140	140	82	10	12.2%
F	Pregnant	26	26	16	5	31.3%
	Postpartum	20	20	11	2	18.2%
	Caregiver with child	99	99	46	12	26.1%
	F Totals	145	145	73	19	26.0%
Pregnant Total		154	153	99	22	22.2%
Postpartum Total		182	182	114	17	14.9%
Caregiver with Child Total		506	505	292	54	18.5%
Grand Total		842	840	505	93	18.4%

^a To be eligible for the interim wave, it was necessary for the sample member to have contact information (phone or mailing address). Contact information was not available for two sample members.

^b Cooperation rate for phone follow-up = Completed by phone/CATI initiated

H.4 Final Survey Data Collection

All participants who completed the initial survey were eligible for the final survey, regardless of whether they completed the interim survey. Survey procedures for the final wave mirrored the procedures followed in the interim wave. A postcard was mailed to sample members approximately 5 days after the initial SAQ mailing to thank sample members who had already completed the survey and remind those who had not yet completed the survey to do so. With the exception of most sample members in the pregnant group,² nonresponders to the first SAQ for which a good address was available were mailed a second SAQ (n = 640) approximately 2 weeks after the first SAQ was mailed.³ An email (if an address was available) was sent about a week after the second mailing to prompt sample members to return the SAQ.

As shown in **Exhibit H-9**, a total of 453 final surveys were completed; 365 participants completed the final survey by responding to the mailed SAQ and 88 participants completed the final survey by CATI. For surveys completed by mail, this represents 81% of the completed final cases (365/453). Approximately 26% of the SAQ completes (n = 95) were received after telephone nonresponse follow-up had been initiated. Once a completed SAQ was received for a case that was being followed up by telephone, the case was finalized and not called again.

Exhibit H-9. Final Cases by Data Collection Mode, Site, and Enrollment Group

Site	Enrollment Group	Completed Initial	Final Completed by Mail	Final Completed by Phone	Total Completes for Final	Refusals/ Closed Cases for Final	Cooperation Rate for Final ^a
A	Pregnant	25	8	4	12	13	48.0%
	Postpartum	42	18	3	21	21	50.0%
	Caregiver with child	78	28	14	42	36	53.8%
	Site A Totals	145	54	21	75	70	51.7%
B	Pregnant	28	8	0	8	20	28.6%
	Postpartum	33	14	2	16	17	48.5%
	Caregiver with child	75	39	11	50	25	66.7%
	Site B Totals	136	61	13	74	62	54.4%

(continued)

² In the final wave, the decision to mail SAQ2 was made after most of the pregnant group had exceeded the time frame for the SAQ2 mailing; therefore, no participants in the pregnant group were mailed SAQ2. Email reminders were sent to this group 3 weeks after SAQ1.

³ For 28 sample members, the advance letter was returned as undeliverable, and for 35 sample members, the first SAQ was returned as undeliverable. When an undeliverable item was received, subsequent mailings were not sent to that address.

Exhibit H-9. Final Cases by Data Collection Mode, Site, and Enrollment Group

Site	Enrollment Group	Completed Initial	Final Completed by Mail	Final Completed by Phone	Total Completes for Final	Refusals/ Closed Cases for Final	Cooperation Rate for Final ^a
C	Pregnant	31	7	4	11	20	35.5%
	Postpartum	27	10	4	14	13	51.9%
	Caregiver with child	83	34	9	43	40	51.8%
	Site C Totals	141	51	17	68	73	48.2%
D	Pregnant	19	6	3	9	10	47.4%
	Postpartum	20	6	3	9	11	45.0%
	Caregiver with child	96	47	7	54	42	56.2%
	Site D Totals	135	59	13	72	63	53.3%
E	Pregnant	25	12	2	14	11	56.0%
	Postpartum	40	15	2	17	23	42.5%
	Caregiver with child	75	31	5	36	39	48.0%
	Site E Totals	140	58	9	67	73	47.9%
F	Pregnant	26	14	1	15	11	57.7%
	Postpartum	20	10	2	12	8	60.0%
	Caregiver with child	99	58	12	70	29	70.7%
	Site F Totals	145	82	15	97	48	66.9%
Pregnant Total		154	55	14	69	85	44.8%
Postpartum Total		182	73	16	89	93	48.9%
Caregiver with Child Total		506	237	58	295	211	58.3%
Grand Total		842	365	88	453	389	53.8%

^a Cooperation rate = Total completes/Completed initial

Exhibit H-10 provides the results of the final mail survey by site and enrollment group. Mail survey cooperation rates varied across sites and ranged from 36% to 57%. The cooperation rate for participants in the caregiver with eligible child was higher for the final survey compared with the pregnant and postpartum enrollment groups ($p = .004$).

Exhibit H-10. Final Mail Survey (SAQ) Results by Site and Enrollment Group

Site	Enrollment Group	Completed Initial	Eligible for Final ^a	Mailed SAQ1	Mailed SAQ2	Completed Final by Mail	Cooperation Rate for Mail Survey ^b
A	Pregnant	25	25	25	0 ^c	8	32.0%
	Postpartum	42	42	40	54	18	42.9%
	Caregiver with child	78	78	68	59	28	35.9%
	A Totals	145	145	133	113	54	37.2%
B	Pregnant	28	27	25	0 ^c	8	28.6%
	Postpartum	33	33	31	42	14	42.4%
	Caregiver with child	75	75	72	68	39	52.0%
	B Totals	136	135	128	110	61	44.9%
C	Pregnant	31	31	30	0 ^c	7	22.6%
	Postpartum	27	27	23	28	10	37.0%
	Caregiver with child	83	82	79	71	34	41.0%
	C Totals	141	140	132	99	51	36.2%
D	Pregnant	19	19	19	0 ^c	6	31.6%
	Postpartum	20	20	19	28	6	30.0%
	Caregiver with child	96	96	90	80	47	49.0%
	D Totals	135	135	128	108	59	43.7%
E	Pregnant	25	25	24	0 ^c	12	48.0%
	Postpartum	40	40	37	46	15	37.5%
	Caregiver with child	75	75	70	56	31	41.3%
	E Totals	140	140	131	102	58	41.4%
F	Pregnant	26	26	25	0 ^c	14	53.8%
	Postpartum	20	20	16	22	10	50.0%
	Caregiver with child	99	99	95	86	58	58.6%
	F Totals	145	145	136	108	82	56.5%
Pregnant Total		154	153	148	0 ^c	55	35.7%
Postpartum Total		182	182	166	220	73	40.1%
Caregiver with Child Total		506	505	474	420	237	46.8%
Grand Total		842	840	788 ^d	640	365	43.3%

^a To be eligible for the final wave, it was necessary for the sample member to have contact information (phone or mailing address). Contact information was not available for two sample members, making the initially eligible sample = 840.

^b Cooperation rate for mail survey = Completed by mail/Completed initial

^c The decision to mail SAQ2 was made after the majority of the pregnant group had exceeded the time frame for the SAQ2 mailing; therefore, no participants in the pregnant group were mailed a second SAQ.

^d In addition to the 2 sample members not eligible for final, 52 cases did not receive the SAQ1 mailing because of (1) receipt of an undeliverable advance letter with no forwarding address or (2) lack of a good mailing address after interim data collection. These cases were considered eligible for telephone follow-up.

Sample members were added to the queue for telephone nonresponse follow-up when the completed SAQ was not received by the individual “target completion date.” Target completion dates for women who were pregnant and in their first or second trimester at enrollment were 6 months after the expected due date and for remaining sample members 12 months after enrollment. A total of 577 cases (69% of those eligible for the final wave) were initiated into CATI for telephone nonresponse follow-up.

At least 12 contact attempts were made before finalizing a case, except when there was a refusal or other reason (e.g., participant out of the country or deceased) to finalize sooner. Call attempts were monitored to ensure all cases were called on different days of the week and at different times of day, including evenings and weekends in addition to weekday hours. As in interim data collection, call attempts were made approximately every 2 days, with exceptions made when the individual who answered refused or hung up or when the participant said they had mailed or were going to return the survey by mail.

A total of 88 cases were completed by telephone of the 577 cases loaded in CATI. This represents a 15% completion rate of all CATI cases and 19% of all completed cases for the final wave (88/453). CATI cases not completed by phone either were completed by mail after being initiated into CATI (n = 94) or finalized as partial or incomplete after all mail and telephone efforts were exhausted (n = 204). **Exhibit H-11** shows the final disposition of the CATI cases.

Exhibit H-11. Final Dispositions for Final Wave Nonresponse Phone Follow-Up (CATI)

Finalized/Completed	Number
Final Ineligible	
Deceased/out of sample	2
Subtotal	
Final Unlocatable	
Unlocatable after tracing	16
Finalized after 12 call attempts	339
Subtotal	355
Final Contacting	
Out of country	2
Subtotal	2
Final Refusals	
Final refusal (verbally declined to complete survey)	25
Subtotal	25
Final Completes	
Partial interview (started survey but did not complete through at least Question 30)	11
Complete	88
Completed by mail after being loaded into CATI	94
Subtotal	193
Final Cases Total	577

Exhibit H-12 shows the results of the final phone follow-up by site and enrollment group. Phone follow-up cooperation rates varied across sites and ranged from 6% to 18%. Cooperation rates also varied by enrollment group, but only slightly—9% for the pregnant and postpartum groups and 12% for the caregiver with child group.

Exhibit H-12. Final Phone Survey (CATI) Follow-Up by Site and Enrollment Group

Site	Enrollment Group	Completed Initial	Eligible for Final ^a	CATI Initiated for Final	Completed Final by Phone	Cooperation Rate for Phone Follow-Up ^b
A	Pregnant	25	25	21	4	16.0%
	Postpartum	42	42	31	3	7.1%
	Caregiver with child	78	78	54	14	17.9%
	A Totals	145	145	106	21	14.4%
B	Pregnant	28	27	23	0	0%
	Postpartum	33	33	24	2	6.0%
	Caregiver with child	75	75	45	11	13.3%
	B Totals	136	135	92	13	8.8%
C	Pregnant	31	31	27	4	12.9%
	Postpartum	27	27	18	4	14.8%
	Caregiver with child	83	82	58	9	10.8%
	C Totals	141	140	103	17	12.1%
D	Pregnant	19	19	14	3	15.8%
	Postpartum	20	20	16	3	15.0%
	Caregiver with child	96	96	61	7	7.3%
	D Totals	135	135	91	13	9.6%
E	Pregnant	25	25	16	2	8.0%
	Postpartum	40	40	28	2	5.0%
	Caregiver with child	75	75	49	5	6.7%
	E Totals	140	140	93	9	6.4%
F	Pregnant	26	26	16	1	3.8%
	Postpartum	20	20	15	2	10.0%
	Caregiver with child	99	99	61	12	12.1%
	F Totals	145	145	92	15	17.9%
Pregnant Total		154	153	117	14	9.1%
Postpartum Total		182	182	132	16	8.8%
Caregiver with Child Total		506	505	328	58	11.5%
Grand Total		842	840	577	88	10.5%

^a To be eligible for the interim wave, it was necessary for the sample member to have contact information (phone or mailing address). Contact information was not available for two sample members.

^b Cooperation rate for phone follow-up = Completed by phone/CATI initiated.

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APPENDIX I
ADDITIONAL RESULTS FOR THE PROCESS EVALUATION

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Exhibit I-1. Estimated Percentage of Participants Who Receive the Nutrition Education Contacts Offered by Participant Category for Participants Who Are Not High Risk, by Site (RQ10)

Category, Certification Period	A	B^a	C	D	E	F	Overall Estimated %	Weighted % from Phase I Site Survey
Prenatal woman, enrolling in 1st trimester (certification 9 mos.) ^b	33.0%	—	75.0%	80.0%	90.0%	90.0%	73.6%	74.9%
Prenatal woman, enrolling in 2nd trimester (certification 6 mos.)	33.0%	—	75.0%	75.0%	80.0%	90.0%	70.6%	74.6%
Prenatal woman, enrolling in 3rd trimester (certification 3 mos.)	33.0%	—	75.0%	75.0%	80.0%	90.0%	70.6%	75.0%
Breastfeeding woman, 12-month certification	33.0%	—	75.0%	80.0%	100.0%	90.0%	75.6%	74.2%
Postpartum woman, not breastfeeding, 6-month certification	33.0%	—	90.0%	75.0%	100.0%	90.0%	77.6%	77.4%
Infant, 12-month certification period	33.0%	—	90.0%	80.0%	90.0%	90.0%	76.6%	80.0%
Child, 6-month certification	NA	—	NA	NA	50.0%	90.0%	76.7%	79.3%
Child, 12-month certification	33.0%	—	75.0%	75.0%	NA	NA	61.0%	77.2%

Source: Phase I 2014 Site Survey and verified in POC Initial Interview. The weighted percentage of participants in each category who receive contacts offered is from the 2014 Site Survey.

^a Site was unable to provide an estimate.

^b Prenatal certification periods begin at enrollment and end 6 weeks postpartum.

NA = not applicable

Exhibit I-2. Estimated Percentage of Participants Who Receive the Nutrition Education Contacts Offered by Participant Category for Participants Who Are High Risk, by Site (RQ10)

Category, Certification Period	A	B ^a	C	D	E	F	Overall Estimated %	Weighted % from Phase I Site Survey
Prenatal woman, enrolling in 1st trimester (certification 9 mos.) ^b	33.0%	—	75.0%	50.0%	90.0%	90.0%	67.6%	72.3%
Prenatal woman, enrolling in 2nd trimester (certification 6 mos.)	33.0%	—	75.0%	75.0%	80.0%	90.0%	70.6%	72.8%
Prenatal woman, enrolling in 3rd trimester (certification 3 mos.)	33.0%	—	75.0%	75.0%	80.0%	90.0%	70.6%	73.0%
Breastfeeding woman, 12-month certification	33.0%	—	75.0%	70.0%	100.0%	90.0%	73.6%	72.4%
Postpartum woman, not breastfeeding, 6-month certification	33.0%	—	90.0%	50.0%	80.0%	90.0%	68.6%	74.1%
Infant, 12-month certification period	33.0%	—	90.0%	75.0%	90.0%	90.0%	75.6%	76.6%
Child, 6-month certification	NA	—	90.0%	NA	50.0%	90.0%	76.7%	75.8%
Child, 12-month certification	33.0%	—	75.0%	50.0%	NA	NA	52.7%	73.2%

Source: Phase I 2014 Site Survey and verified in POC Initial Interview. The weighted percentage of participants in each category who receive contacts offered is from the 2014 Site Survey.

^a Site B did not provide an estimate.

^b Prenatal certification periods begin at enrollment and end 6 weeks postpartum.

NA = not applicable

Exhibit I-3. Self-Reported Number of Nutrition Education Contacts Received at the Site for Participants Enrolled in the Evaluation Study by Site (RQ10a)

Time Period/ Enrollment Group	A	B	C	D	E	F	Overall
6-Month Period before Initial Survey							
Average number of visits (mean, range)							
Pregnant at enrollment	2.8 (1, 5)	2.7 (1, 5)	2.6 (1, 5)	3.1 (1, 5)	2.7 (1, 5)	2.5 (1, 5)	2.7 (1, 5)
Postpartum at enrollment (infant up to 6 months)	2.4 (1, 6)	3.2 (1, 6)	2.1 (1, 6)	2.4 (1, 6)	2.1 (1, 6)	2.6 (1, 6)	2.4 (1, 6)
Parent or caregiver of child	2.3 (1, 6)	2.7 (1, 6)	2.3 (1, 6)	2.1 (1, 6)	2.2 (1, 6)	2.3 (1, 6)	2.3 (1, 6)
Number of respondents	141	130	131	131	137	141	811
Number of nonrespondents	4	6	10	4	3	4	31
6-Month Period before Interim Survey							
Average number of visits (mean, range)							
Pregnant at enrollment	2.6 (1, 5)	2.6 (0, 6)	1.7 (0, 4)	1.9 (0, 4)	1.8 (0, 4)	2.3 (0, 6)	2.2 (0, 6)
Postpartum at enrollment (infant up to 6 months)	2.3 (0, 6)	1.9 (0, 5)	1.6 (0, 4)	1.4 (0, 6)	2.3 (0, 6)	1.8 (0, 4)	2.0 (0, 6)
Parent or caregiver of child	1.5 (0, 6)	1.5 (0, 6)	1.8 (0, 6)	1.2 (0, 6)	1.1 (0, 3)	1.7 (0, 6)	1.5 (0, 6)
Number and percentage of participants that reported no visits							
Pregnant at enrollment	0 0.0%	3 18.8%	3 16.7%	3 21.4%	3 21.4%	2 10.0%	14 14.1%
Postpartum at enrollment (infant up to 6 months)	4 16.7%	5 25.0%	1 5.9%	3 30.0%	1 4.0%	1 7.7%	15 13.8%
Parent or caregiver of child	11 25.6%	17 32.7%	9 7.3%	25 38.5%	12 29.3%	10 13.5%	84 25.7%
Number of respondents	84	88	87	89	80	107	535
Number of nonrespondents	3	3	2	3	1	2	14

(continued)

Exhibit I-3. Self-Reported Number of Nutrition Education Contacts Received at the Site for Participants Enrolled in the Evaluation Study by Site (RQ10a) (continued)

Time Period/ Enrollment Group	A	B	C	D	E	F	Overall
6-Month Period before Final Survey							
Average number of visits (mean, range)							
Pregnant at enrollment	1.7 (0, 4)	1.8 (0, 4)	2.4 (0, 6)	1.6 (0, 4)	1.6 (0, 5)	2.1 (0, 6)	1.8 (0, 6)
Postpartum at enrollment (infant up to 6 months)	1.2 (0, 3)	0.7 (0, 6)	2.2 (0, 6)	1.2 (0, 3)	1.9 (0, 6)	0.9 (0, 2)	1.3 (0, 6)
Parent or caregiver of child	1.5 (0, 6)	1.5 (0, 6)	1.2 (0, 3)	1.0 (0, 5)	1.0 (0, 6)	1.3 (0, 5)	1.2 (0, 6)
Number and percentage of participants that reported no visits							
Pregnant at enrollment	2 16.7%	2 5.0%	1 10.0%	3 3.3%	5 35.7%	4 26.7%	17 25.0%
Postpartum at enrollment (infant up to 6 months)	7 35.0%	12 80.0%	2 15.4%	2 22.2%	4 25.0%	4 33.3%	31 36.5%
Parent or caregiver of child	12 32.4%	19 38.0%	14 35.0%	25 49.0%	15 41.7%	21 30.0%	106 37.3%
Number of respondents	69	73	63	69	66	97	437
Number of nonrespondents	6	1	5	3	1	0	16

Source: Participant Surveys, Initial, Interim, and Final

Notes: Participants were asked the following question at the initial, interim, and final time periods: "In the past 6 months, how many times did you visit a WIC office and get information on health or healthy eating? Include the day you signed up for this study. Do not include visits for other reasons such as picking up a food instrument or voucher or taking a friend to her appointment." For the initial survey, the following additional instructions were provided: "Mark "Once" if the day you signed up for this study was your first visit to a WIC office." The response options were "none," "once," "2 times," "3 times," "4 times," "5 times," and "6 or more times." For the initial survey only, if a respondent answered "none," a value of "1" was assigned to calculate a mean because the respondent should have answered "Once" because they had to have visited a WIC office for an appointment to enroll in the study. A value of "6" was assigned to calculate a mean if a respondent answered 6 or more times.

Pregnant women who were in their first or second trimester completed the interim survey approximately 1 month prior to their due date and completed the final survey approximately 6 months postpartum. Pregnant women who were in their third trimester, women who were postpartum at enrollment, and parents or caregivers of a child completed the interim survey approximately 6 months after the initial survey and completed the final survey approximately 12 months after the initial survey.

Exhibit I-4. Time Spent Providing Nutrition Education by Type of Visit, by Site (Range of Minutes) (RQ10b and 10c)

Type of Visit	A	B	C	D	E	F	Weighted Mean from Phase I Site Survey
Enrollment certification	11-20	5-10	11-20	11-20	11-20	5-10	19.2
Recertification—Not high risk, 1 person	11-20	5-10	11-20	11-20	11-20	5-10	13.9
Recertification—High risk, 1 person	21-30	5-10	11-20	11-20	11-20	5-10	19.3
Recertification—2 or more family members	21-30	11-20	31-45	21-30	11-20	11-20	25.7
Mid-certification	11-20	5-10	11-20	5-10	11-20	5-10	14.0
Secondary education follow-up, one-on-one	21-30	11-20	5-10	5-10	5-10	5-10	11.7
Secondary education follow-up, group	21-30	NA	5-10	31-45	11-20	21-30	20.6
High-risk follow-up	21-30	11-20	5-10	11-20	5-10	11-20	18.5

Source: Phase I 2014 Site Survey and verified in POC Initial Interview. The weighted mean minutes of nutrition education provided during each type of visit is from the 2014 Site Survey.

Exhibit I-5. Training Provided by Site

	A	B	C	D	E	F	Overall
Average training hours for 6-month time period ^a	14	11	66	61	26	46	37

Source: POC Initial, Interim, and Final Interviews

^a Average of training totals for three consecutive 6-month time periods.

Exhibit I-6. Training Received During the Past 12 Months by Site ^a (RQ10g)

Training Topic Received (n, %) ^a	A	B	C	D	E	F	Overall	Weighted % from Phase I Site Survey
Breastfeeding	6 100.0%	3 100.0%	9 90.0%	18 94.7%	10 100.0%	9 90.0%	55 94.8%	97%
Prenatal nutrition	6 100.0%	3 100.0%	7 70.0%	14 73.7%	7 70.0%	3 30.0%	40 69.0%	69%
Infant nutrition	6 100.0%	2 66.7%	9 90.0%	16 84.2%	8 80.0%	8 80.0%	49 84.5%	80%
Child nutrition	6 100.0%	3 100.0%	8 80.0%	13 68.4%	7 70.0%	8 80.0%	45 77.6%	76%
VENA skills	6 100.0%	0 0.0%	4 40.0%	2 10.5%	6 60.0%	3 30.0%	21 36.2%	62%
Participant- or learner-centered education	5 83.3%	0 0.0%	5 50.0%	14 73.7%	1 10.0%	6 60.0%	31 53.4%	67%
Motivational interviewing	5 83.3%	1 33.3%	5 50.0%	6 31.6%	6 60.0%	7 70.0%	30 51.7%	61%
Emotion-based counseling	5 83.3%	0 0.0%	7 70.0%	4 21.1%	1 10.0%	0 0.0%	17 29.3%	30%
Group facilitation skills	6 100.0%	0 0.0%	4 40.0%	3 15.8%	3 30.0%	3 30.0%	19 32.8%	32%
Weight and growth issues	6 100.0%	1 33.3%	5 50.0%	9 47.4%	6 60.0%	5 50.0%	32 55.2%	65%
Other nutrition topics	4 66.7%	0 0.0%	6 60.0%	9 47.4%	6 60.0%	4 0.0%	29 50.0%	65%
Number of respondents	6	3	10	19	10	10	58	
Number of nonrespondents	8	3	10	19	10	10	60	

Source: Nutrition Educator Survey. Weighted percentage is of sites that provided training on the topic from the Phase I 2014 Site Survey.

^a Number and percentage of nutrition educators who responded yes to receiving training on the topic within the past 12 months.

VENA = Value Enhanced Nutrition Assessment

Exhibit I-7. Method of Training Received During the Past 12 Months by Site ^a (RQ10g)

Training Method (n, %) ^a	A	B	C	D	E	F	Overall
National/State/regional conferences or workshops	7 87.5%	2 66.7%	7 70%	12 63.2%	4 40.0%	2 20.0%	34 56.7%
Training sessions/courses at a State training center	1 12.5%	1 33.3%	9 90%	4 21.1%	2 20.0%	3 30.0%	20 33.3%
In-person training sessions provided by local agency	3 37.5%	0 0.0%	6 60.0%	14 73.7%	6 60.0%	6 60.0%	35 58.3%
In-person training sessions provided by other local agencies or programs	2 25.0%	3 100.0%	5 50.0%	8 42.1%	3 30.0%	2 20.0%	23 38.3%
State or local agency webinars	0 0.0%	3 100.0%	2 20.0%	10 52.6%	3 30.0%	7 70.0%	25 41.7%
Online training modules or courses	5 62.5%	1 33.3%	7 70.0%	15 78.9%	8 80.0%	4 40.0%	40 66.7%
Training provided during local agency or site staff meetings	5 62.5%	0 0.0%	5 50.0%	17 89.5%	8 80.0%	9 90.0%	44 73.3%
Individual staff mentoring/coaching	3 37.5%	0 0.0%	2 20.0%	12 63.2%	5 50.0%	4 40.0%	26 43.3%
Other ^b	1 12.5%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 1.7%
Number of respondents	8	3	10	19	10	10	60
Number of nonrespondents	0	0	0	0	0	0	0

Source: Nutrition Educator Survey

^a Number and percentage of nutrition educators who responded yes to method of training during the past 12 months.

^b Respondent did not write in a response for "other."

Exhibit I-8a. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Participants Who Were Pregnant at Enrollment (RQ11f)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Eating more fruit and vegetables (n, %)							
No exposures	1 4.5%	7 29.2%	1 3.7%	1 5.3%	5 25.0%	0 0.0%	15 10.9%
At least one exposure	13 59.1%	10 41.7%	15 55.6%	8 42.1%	7 35.0%	14 56.0%	67 48.9%
At least two exposures	5 22.7%	4 16.7%	9 33.3%	9 47.4%	6 30.0%	9 36.0%	42 30.7%
At least three exposures	3 13.6%	3 12.5%	2 7.4%	1 5.3%	2 10.0%	2 8.0%	13 9.5%
Eating more whole grains (n, %)							
No exposures	2 9.1%	9 37.5%	0 0.0%	5 26.3%	3 15.0%	5 20.0%	24 17.6%
At least one exposure	14 63.6%	10 41.7%	16 61.5%	8 42.1%	11 55.0%	10 40.0%	69 50.7%
At least two exposures	4 18.2%	3 12.5%	10 38.5%	5 26.3%	4 20.0%	9 36.0%	35 25.7%
At least three exposures	2 9.1%	2 8.3%	0 0.0%	1 5.3%	2 10.0%	1 4.0%	8 5.9%
Drinking lower-fat milk (1% or fat-free/skim milk) (n, %)							
No exposures	3 13.6%	7 29.2%	1 4.0%	7 36.8%	3 15.0%	5 20.0%	26 19.3%
At least one exposure	12 54.5%	10 41.7%	15 60.0%	7 36.8%	11 55.0%	11 44.0%	66 48.9%
At least two exposures	4 18.2%	6 25.0%	8 32.0%	4 21.1%	4 20.0%	7 28.0%	33 24.4%
At least three exposures	3 13.6%	1 4.2%	1 4.0%	1 5.3%	2 10.0%	2 8.0%	10 7.4%

(continued)

Exhibit I-8a. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Participants Who Were Pregnant at Enrollment (RQ11f) (continued)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Getting more physical activity (n, %)							
No exposures	2 9.1%	7 29.2%	4 15.4%	5 26.3%	5 25.0%	6 24.0%	29 21.3%
At least one exposure	13 59.1%	12 50.0%	14 53.8%	6 31.6%	7 35.0%	11 44.0%	63 46.3%
At least two exposures	5 22.7%	4 16.7%	8 30.8%	6 31.6%	6 30.0%	6 24.0%	35 25.7%
At least three exposures	2 9.1%	1 4.2%	0 0.0%	2 10.5%	2 10.0%	2 8.0%	9 6.6%
Shopping for and preparing healthier foods (n, %)							
No exposures	6 27.3%	9 37.5%	4 15.4%	5 26.3%	6 30.0%	5 20.0%	35 25.7%
At least one exposure	9 40.9%	9 37.5%	13 50.0%	10 52.6%	10 50.0%	14 56.0%	65 47.8%
At least two exposures	4 18.2%	4 16.7%	8 30.8%	3 15.8%	3 15.0%	4 16.0%	26 19.1%
At least three exposures	3 13.6%	2 8.3%	1 3.8%	1 5.3%	1 5.0%	2 8.0%	10 7.4%
Drinking water instead of soda and sugary drinks (n, %)							
No exposures	2 9.1%	5 21.7%	1 4.0%	5 26.3%	4 20.0%	8 32.0%	25 18.7%
At least one exposure	12 54.5%	11 47.8%	13 52.0%	8 42.1%	9 45.0%	8 32.0%	61 45.5%
At least two exposures	6 27.3%	5 21.7%	11 44.0%	5 26.3%	5 25.0%	7 28.0%	39 29.1%
At least three exposures	2 9.1%	2 8.7%	0 0.0%	1 5.3%	2 10.0%	2 8.0%	9 6.7%

(continued)

Exhibit I-8a. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Participants Who Were Pregnant at Enrollment (RQ11f) (continued)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Breastfeeding (n, %)							
No exposures	0 0.0%	3 13.0%	2 7.7%	1 5.3%	2 10.0%	4 16.0%	12 8.9%
At least one exposure	14 63.6%	11 47.8%	14 53.8%	11 57.9%	13 65.0%	11 44.0%	74 54.8%
At least two exposures	6 27.3%	7 30.4%	9 34.6%	6 31.6%	5 25.0%	6 24.0%	39 28.9%
At least three exposures	2 9.1%	2 8.7%	1 3.8%	1 5.3%	0 0.0%	4 16.0%	10 7.4%
Number of respondents	22	23-24	25-27	19	20	25	134-137

Source: Participant Surveys, Initial, Interim, and Final

^a Participants were asked to provide information on their most recent nutrition education visit at initial, interim, and final. No exposures means that the participant did not receive information on this topic for any of the three visits. At least one exposure means that the participant received information on this topic during one of the three visits, at least two exposures means that the participant received information on this topic during two of the three visits, and at least three exposures means that the participant received information on this topic during all three visits. This is a conservative estimate because participants may have had additional visits in which nutrition education was provided (e.g., two visits during the 6-month period between initial and interim); however, information on these visits was not collected.

Exhibit I-8b. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Participants Who Were Postpartum at Enrollment (RQ11f)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Eating more fruit and vegetables (n, %)							
No exposures	4 10.8%	13 48.1%	4 16.7%	4 25.0%	5 15.2%	2 10.5%	32 20.5%
At least one exposure	21 56.8%	13 48.1%	9 37.5%	7 43.8%	12 36.4%	6 31.6%	68 43.6%
At least two exposures	6 16.2%	1 3.7%	9 37.5%	4 25.0%	13 39.4%	7 36.8%	40 25.6%
At least three exposures	6 16.2%	0 0.0%	2 8.3%	1 6.3%	3 9.1%	4 21.1%	16 10.3%
Eating more whole grains (n, %)							
No exposures	7 18.9%	16 59.3%	4 16.7%	6 37.5%	7 21.2%	6 33.3%	46 29.7%
At least one exposure	19 51.4%	9 33.3%	10 41.7%	6 37.5%	11 33.3%	5 27.8%	60 38.7%
At least two exposures	7 18.9%	2 7.4%	9 37.5%	3 18.8%	11 33.3%	3 16.7%	35 22.6%
At least three exposures	4 10.8%	0 0.0%	1 4.2%	1 6.3%	4 12.1%	4 22.2%	14 9.0%
Drinking lower-fat milk (1% or fat-free/skim milk) (n, %)							
No exposures	7 18.9%	10 37.0%	5 20.8%	4 25.0%	6 18.2%	5 26.3%	37 23.7%
At least one exposure	19 51.4%	15 55.6%	11 45.8%	8 50.0%	14 42.4%	8 42.1%	75 48.1%
At least two exposures	5 13.5%	2 7.4%	6 25.0%	3 18.8%	8 24.2%	4 21.1%	28 17.9%
At least three exposures	6 16.2%	0 0.0%	2 8.3%	1 6.3%	5 15.2%	2 10.5%	16 10.3%

(continued)

Exhibit I-8b. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Participants Who Were Postpartum at Enrollment (RQ11f) (continued)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Getting more physical activity (n, %)							
No exposures	6 16.7%	16 59.3%	9 37.5%	6 37.5%	9 27.3%	5 26.3%	51 32.9%
At least one exposure	18 50.0%	9 33.3%	9 37.5%	6 37.5%	15 45.5%	5 26.3%	62 40.0%
At least two exposures	9 25.0%	2 7.4%	6 25.0%	2 12.5%	6 18.2%	6 31.6%	31 20.0%
At least three exposures	3 8.3%	0 0.0%	0 0.0%	2 12.5%	3 9.1%	3 15.8%	11 7.1%
Shopping for and preparing healthier foods (n, %)							
No exposures	8 21.6%	15 55.6%	6 25.0%	6 37.5%	10 30.3%	4 21.1%	49 31.4%
At least one exposure	21 56.8%	11 40.7%	10 41.7%	5 31.3%	12 36.4%	6 31.6%	65 41.7%
At least two exposures	5 13.5%	1 3.7%	6 25.0%	4 25.0%	9 27.3%	6 31.6%	31 19.9%
At least three exposures	3 8.1%	0 0.0%	2 8.3%	1 6.3%	2 6.1%	3 15.8%	11 7.1%
Drinking water instead of soda and sugary drinks (n, %)							
No exposures	7 18.9%	10 38.5%	5 21.7%	4 25.0%	7 21.2%	4 21.1%	37 24.0%
At least one exposure	18 48.6%	14 53.8%	9 39.1%	8 50.0%	11 33.3%	4 21.1%	64 41.6%
At least two exposures	8 21.6%	2 7.7%	7 30.4%	3 18.8%	10 30.3%	7 36.8%	37 24.0%
At least three exposures	4 10.8%	0 0.0%	2 8.7%	1 6.3%	5 15.2%	4 21.1%	16 10.4%

(continued)

Exhibit I-8b. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Participants Who Were Postpartum at Enrollment (RQ11f) (continued)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Breastfeeding (n, %)							
No exposures	10 27.0%	9 33.3%	9 37.5%	3 18.8%	7 21.2%	3 16.7%	41 26.5%
At least one exposure	18 48.6%	15 55.6%	9 37.5%	8 50.0%	16 48.5%	5 27.8%	71 45.8%
At least two exposures	5 13.5%	2 7.4%	5 20.8%	4 25.0%	9 27.3%	7 38.9%	32 20.6%
At least three exposures	4 10.8%	1 3.7%	1 4.2%	1 6.3%	1 3.0%	3 16.7%	11 7.1%
Number of respondents	36-37	26-27	23-24	16	33	18-19	154-156

Source: Participant Surveys, Initial, Interim, and Final

^a Participants were asked to provide information on their most recent nutrition education visit at initial, interim, and final. No exposures means that the participant did not receive information on this topic for any of the three visits. At least one exposure means that the participant received information on this topic during one of the three visits, at least two exposures means that the participant received information on this topic during two of the three visits, and at least three exposures means that the participant received information on this topic during all three visits. This is a conservative estimate because participants may have had additional visits in which nutrition education was provided (e.g., two visits during the 6-month period between initial and interim); however, information on these visits was not collected.

Exhibit I-8c. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Caregivers of Eligible Child (RQ11f)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Eating more fruit and vegetables (n, %)							
No exposures	4 5.6%	12 19.7%	6 8.0%	14 16.5%	10 13.9%	12 12.5%	58 12.6%
At least one exposure	38 53.5%	25 41.0%	33 44.0%	44 51.8%	45 62.5%	35 36.5%	220 47.8%
At least two exposures	24 33.8%	20 32.8%	27 36.0%	22 25.9%	14 19.4%	28 29.2%	135 29.3%
At least three exposures	5 7.0%	4 6.6%	9 12.0%	5 5.9%	3 4.2%	21 21.9%	47 10.2%
Eating more whole grains (n, %)							
No exposures	8 11.3%	26 42.6%	11 14.9%	27 31.8%	20 27.8%	25 26.6%	117 25.6%
At least one exposure	36 50.7%	20 32.8%	34 45.9%	38 44.7%	42 58.3%	34 36.2%	204 44.6%
At least two exposures	21 29.6%	12 19.7%	22 29.7%	18 21.2%	7 9.7%	24 25.5%	104 22.8%
At least three exposures	6 8.5%	3 4.9%	7 9.5%	2 2.4%	3 4.2%	11 11.7%	32 7.0%
Drinking lower-fat milk (1% or fat-free/skim milk) (n, %)							
No exposures	12 18.5%	13 22.4%	20 28.6%	16 20.8%	15 22.1%	22 25.3%	98 23.1%
At least one exposure	32 49.2%	32 55.2%	28 40.0%	44 57.1%	41 60.3%	39 44.8%	216 50.8%
At least two exposures	18 27.7%	10 17.2%	16 22.9%	13 16.9%	9 13.2%	15 17.2%	81 19.1%
At least three exposures	3 4.6%	3 5.2%	6 8.6%	4 5.2%	3 4.4%	11 12.6%	30 7.1%

(continued)

Exhibit I-8c. Participants' Exposure to Nutrition Education Topics During One-on-One Sessions During the 12-Month Evaluation Period, by Site: Caregivers of Eligible Child (RQ11f) (continued)

Number of Exposures ^a	A	B	C	D	E	F	Overall
Getting more physical activity (n, %)							
No exposures	13 18.3%	30 49.2%	25 33.8%	35 40.7%	26 36.1%	45 46.9%	174 37.8%
At least one exposure	33 46.5%	22 36.1%	32 43.2%	41 47.7%	37 51.4%	26 27.1%	191 41.5%
At least two exposures	22 31.0%	7 11.5%	12 16.2%	7 8.1%	8 11.1%	15 15.6%	71 15.4%
At least three exposures	3 4.2%	2 3.3%	5 6.8%	3 3.5%	1 1.4%	10 10.4%	24 5.2%
Shopping for and preparing healthier foods (n, %)							
No exposures	6 8.3%	24 39.3%	12 16.0%	30 35.3%	20 27.8%	28 29.5%	120 26.1%
At least one exposure	38 52.8%	25 41.0%	39 52.0%	39 45.9%	42 58.3%	38 40.0%	221 48.0%
At least two exposures	24 33.3%	9 14.8%	18 24.0%	13 15.3%	6 8.3%	16 16.8%	86 18.7%
At least three exposures	4 5.6%	3 4.9%	6 8.0%	3 3.5%	4 5.6%	13 13.7%	33 7.2%
Drinking water instead of soda and sugary drinks (n, %)							
No exposures	9 12.9%	27 44.3%	15 20.0%	23 27.7%	20 28.2%	23 24.2%	117 25.7%
At least one exposure	36 51.4%	20 32.8%	30 40.0%	41 49.4%	38 53.5%	39 41.1%	204 44.8%
At least two exposures	20 28.6%	12 19.7%	23 30.7%	16 19.3%	11 15.5%	15 15.8%	97 21.3%
At least three exposures	5 7.1%	2 3.3%	7 9.3%	3 3.6%	2 2.8%	18 18.9%	37 8.1%
Number of respondents	65-72	58-61	70-75	77-86	68-72	87-96	425-460

Source: Participant Surveys, Initial, Interim, and Final

^a Participants were asked to provide information on their most recent nutrition education visit at initial, interim, and final. No exposures means that the participant did not receive information on this topic for any of the three visits. At least one exposure means that the participant received information on this topic during one of the three visits, at least two exposures means that the participant received information on this topic during two of the three visits, and at least three exposures means that the participant received information on this topic during all three visits. This is a conservative estimate because participants may have had additional visits in which nutrition education was provided (e.g., two visits during the 6-month period between initial and interim); however, information on these visits was not collected.

Exhibit I-9. Participants’ Perceptions of Who Chose Discussion Topic for Their Most Recent One-on-One Session, by Site (RQ11f)

Which best describes your most recent one-on-one time with a WIC staff person?	A	B	C	D	E	F	Overall
Initial Survey (n, %)							
WIC staff person chose what we talked about.	49 38.6%	34 34.3%	41 35.0%	22 19.3%	34 28.1%	25 19.1%	205 28.9%
I [participant] chose what we talked about.	3 2.4%	2 2.0%	8 6.8%	9 7.9%	8 6.6%	7 5.3%	37 5.2%
WIC staff person and I [participant] together chose what we talked about.	75 59.1%	63 63.6%	68 58.1%	83 72.8%	79 65.3%	99 75.6%	467 65.9%
Number of respondents	127	99	117	114	121	131	709
Number of nonrespondents	2	6	12	6	2	2	30
Final Survey (n, %)							
WIC staff person chose what we talked about.	12 31.6%	13 38.2%	19 47.5%	8 21.1%	11 34.4%	16 28.1%	79 33.1%
I [participant] chose what we talked about.	6 15.8%	2 5.9%	2 5.0%	2 5.3%	1 3.1%	3 5.3%	16 6.7%
WIC staff person and I [participant] together chose what we talked about.	20 52.6%	19 55.9%	19 47.5%	28 73.7%	20 62.5%	38 66.7%	144 60.3%
Number of respondents	38	34	40	38	32	57	239
Number of nonrespondents	3	3	1	0	4	2	13

Source: Participant Surveys, Initial and Final

Exhibit I-10. Participants' Level of Agreement With Statements About Their Most Recent One-on-One Session, by Site (RQ11f)

Statement	A	B	C	D	E	F	Overall
a. How much do you agree or disagree with the following statement: The WIC staff person talked most of the time?							
Initial Survey (n, %)							
Disagree a lot	7 5.6%	12 11.9%	10 8.4%	20 17.9%	10 8.3%	17 13.5%	76 10.8%
Disagree a little	29 23.0%	23 22.8%	25 21.0%	25 22.3%	25 20.7%	42 33.3%	169 24.0%
Agree a little	61 48.4%	49 48.5%	50 42.0%	42 37.5%	54 44.6%	47 37.3%	303 43.0%
Agree a lot	29 23.0%	17 16.8%	34 28.6%	25 22.3%	32 26.4%	20 15.9%	157 22.3%
Number of respondents	126	101	119	112	121	126	705
Number of nonrespondents	3	4	10	8	2	7	34
Final Survey (n, %)							
Disagree a lot	6 16.7%	4 12.1%	1 2.6%	4 10.5%	1 3.0%	7 12.3%	23 9.7%
Disagree a little	11 30.6%	4 12.1%	5 12.8%	11 28.9%	10 30.3%	11 19.3%	52 22.0%
Agree a little	11 30.6%	18 54.5%	18 46.2%	16 42.1%	13 39.4%	28 49.1%	104 44.1%
Agree a lot	8 22.2%	7 21.2%	15 38.5%	7 18.4%	9 27.3%	11 19.3%	57 24.2%
Number of respondents	36	33	39	38	33	57	236
Number of nonrespondents	5	4	2	0	3	2	16

(continued)

Exhibit I-10. Participants' Level of Agreement With Statements About Their Most Recent One-on-One Session, by Site (RQ11f) (continued)

Statement	A	B	C	D	E	F	Overall
b. How much do you agree or disagree with the following statement: The WIC staff person listened to me and understood my concerns?							
Initial Survey (n, %)							
Disagree a lot	1 0.8%	0 0.0%	2 1.7%	1 0.9%	1 0.8%	4 3.1%	9 1.3%
Disagree a little	2 1.6%	0 0.0%	6 5.0%	2 1.8%	6 5.0%	3 2.3%	19 2.7%
Agree a little	32 25.4%	19 18.6%	26 21.7%	17 14.9%	23 19.2%	26 20.0%	143 20.1%
Agree a lot	91 72.2%	83 81.4%	86 71.7%	94 82.5%	90 75.0%	97 74.6%	541 76.0%
Number of respondents	126	102	120	114	120	130	712
Number of nonrespondents	3	3	9	6	3	3	27
Final Survey (n, %)							
Disagree a lot	0 0.0%	0 0.0%	1 2.6%	0 0.0%	1 3.1%	2 3.4%	4 1.7%
Disagree a little	2 5.4%	0 0.0%	2 5.3%	1 2.6%	3 9.4%	5 8.6%	13 5.5%
Agree a little	8 21.6%	9 25.7%	18 47.4%	10 26.3%	10 31.3%	19 32.8%	74 31.1%
Agree a lot	27 73.0%	26 74.3%	17 44.7%	27 71.1%	18 56.3%	32 55.2%	147 61.8%
Number of respondents	37	35	38	38	32	58	238
Number of nonrespondents	4	2	3	0	4	1	14

(continued)

Exhibit I-10. Participants' Level of Agreement With Statements About Their Most Recent One-on-One Session, by Site (RQ11f) (continued)

Statement	A	B	C	D	E	F	Overall
c. How much do you agree or disagree with the following statement: The WIC staff person followed up on issues or questions from my last one-on-one visit?							
Initial Survey (n, %)							
Disagree a lot	13 10.7%	2 2.1%	8 6.8%	8 7.3%	13 11.3%	15 12.7%	59 8.7%
Disagree a little	8 6.6%	13 13.4%	8 6.8%	12 10.9%	11 9.6%	9 7.6%	61 9.0%
Agree a little	44 36.4%	29 29.9%	41 35.0%	23 20.9%	33 28.7%	28 23.7%	198 29.2%
Agree a lot	56 46.3%	53 54.6%	60 51.3%	67 60.9%	58 50.4%	66 55.9%	360 53.1%
Number of respondents	121	97	117	110	115	118	678
Number of nonrespondents	8	8	12	10	8	15	61
Final Survey (n, %)							
Disagree a lot	5 13.5%	6 18.8%	5 12.8%	2 5.3%	8 25.0%	7 12.3%	33 14.0%
Disagree a little	2 5.4%	6 18.8%	7 17.9%	5 13.2%	5 15.6%	7 12.3%	32 13.6%
Agree a little	11 29.7%	13 40.6%	11 28.2%	9 23.7%	8 25.0%	17 29.8%	69 29.4%
Agree a lot	19 51.4%	7 21.9%	16 41.0%	22 57.9%	11 34.4%	26 45.6%	101 43.0%
Number of respondents	37	32	39	38	32	57	235
Number of nonrespondents	4	5	2	0	4	2	17

Source: Participant Surveys, Initial and Final

Exhibit I-11. Strategies to Achieve Goals Observed One-on-One, Face-to-Face Certification Visits by Site (RQ11g)

	A	B	C	D	E	F	Overall
Observations where participants were engaged in discussion about ideas and strategies to achieve goals (n, %)	3 33.3%	2 40.0%	4 80.0%	7 77.8%	2 22.2%	9 100%	27 58.7%
Total number of certification visit observations	9	5	5	9	9	9	46

Source: Onsite observations

Exhibit I-12. Goal Follow-Up Observed One-on-One, Face-to-Face Secondary Education Visits by Site (RQ10h)

	A	B	C	D	E	F	Overall
Observations where goals set at previous visits were mentioned (n, %)	2 66.7%	2 33.3%	3 20.0%	3 25.0%	0 0.0%	4 80.0%	39 84.8%
Total number of noncertification visit observations	3	6	15	12	3	5	46

Source: Onsite observations

Exhibit I-13. Method for Topic Selection for Group Education Sessions Reported by Nutrition Educators by Site (RQ11e)

Method Used (n, %)	A	B	C	D	E	F	Overall (n, %)
Each day, week, month, or quarter has a specific topic.	4 80.0%	2 100.0%	4 57.1%	0 0.0%	3 42.9%	7 87.5%	20 50.0%
There are specific topics for participant categories (e.g., breastfeeding class, prenatal class, infant class).	4 80.0%	0 0.0%	2 28.6%	10 90.9%	5 71.4%	6 75.0%	27 67.5%
Participants select from a menu of topics when they schedule their appointments.	0 0.0%	0 0.0%	1 14.3%	0 0.0%	0 0.0%	0 0.0%	1 2.5%
Topics are determined based on participants' interest during each group session.	0 0.0%	1 50.0%	5 71.4%	3 27.3%	3 42.9%	0 0.0%	12 30.0%
Other ^a	0 0.0%	0 0.0%	1 14.3%	0 0.0%	0 0.0%	0 0.0%	1 2.5%
Number of respondents ^b	5	2	7	11	7	8	40
Number of nonrespondents	0	0	1	0	0	0	1

Source: Nutrition Educator Survey

^a The "Other" response entered was "When I have done groups, I select the topic myself."

^b Nineteen survey respondents skipped this question because they selected "Never" for a prior question about the frequency with which they facilitate group education (eligible respondents n = 41).

Multiple responses possible.

Exhibit I-14. Frequency of Referrals by Nutrition Educators by Site (RQ11h)

Frequency (n, %)	A	B	C	D	E	F	Overall
Never	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Rarely	0 0.0%	0 0.0%	0 0.0%	1 5.3%	1 10.0%	0 0.0%	2 3.4%
Sometimes	1 12.5%	1 33.3%	2 22.2%	7 36.8%	6 60.0%	2 20.0%	19 32.2%
Often	7 87.5%	2 66.7%	7 77.8%	11 57.9%	3 30.0%	8 80.0%	38 64.4%
Number of respondents	8	3	9	19	10	10	59
Number of nonrespondents	0	0	1	0	0	0	1

Source: Nutrition Educator Survey

Exhibit I-15. Methods for Providing Nutrition Education to Participants Who Do Not Speak English, by Site (RQ12)

Method (n, %) ^a	A	B	C	D	E	F	Overall	Weighted % from Phase I Site Survey
Educator speaks same language as most of non-English-speaking participants	0 0.0%	0 0.0%	1 10.0%	2 10.5%	1 10.0%	3 30.0%	7 11.7%	NA
Educator asks bilingual WIC staff member to interpret or translate	8 100.0%	2 66.7%	10 100.0%	2 10.5%	2 20.0%	6 60.0%	30 50.0%	51%
Educator uses interpreter or translator available at site	3 37.5%	1 33.3%	3 30.0%	18 94.7%	2 20.0%	3 30.0%	30 50.0%	40%
Educator uses language line/phone interpreter service	2 25.0%	1 33.3%	9 90.0%	19 100.0%	7 70.0%	4 40.0%	42 70.0%	73%
Educator uses translation program on computer	1 12.5%	0 0.0%	0 0.0%	0 0.0%	1 10.0%	0 0.0%	2 3.3%	9%
Participants bring family member or friend to interpret	6 75.0%	2 66.7%	8 80.0%	11 57.9%	8 80.0%	4 40.0%	39 65.0%	50%
Other (n, %) ^b	0 0.0%	0 0.0%	1 10.0%	0 0.0%	0 0.0%	0 0.0%	1 1.7%	<1%
Number of respondents	8	3	10	19	10	10	60	
Number of nonrespondents	0	0	0	0	0	0	0	

Source: Nutrition Educator Survey. Weighted percentage of methods used is from the Phase I 2014 Site Survey.

^a Respondents could select multiple responses.

^b Other factor was not specified by the respondent.

NA = not applicable

Exhibit I-16. Participants' Perceptions of Helpfulness of WIC Visits During Their Most Recent Nutrition Education Session, by Site (RQ13)

Which best describes the information you received at your most recent WIC visit?	A	B	C	D	E	F	Overall
Initial Survey (n, %)							
The information was helpful because it was new to me.	41 29.5%	37 28.5%	59 44.4%	43 32.8%	47 34.3%	49 35.0%	276 34.1%
The information was helpful. I [participant] knew the information, but it was good to hear it again.	95 68.3%	79 60.8%	65 48.9%	75 57.3%	80 58.4%	76 54.3%	470 58.0%
The information was not that helpful because I [participant] already knew it.	3 2.2%	12 9.2%	8 6.0%	12 9.2%	9 6.6%	12 8.6%	56 6.9%
The information was not that helpful because it did not apply to me.	0 0.0%	2 1.5%	1 0.8%	1 0.8%	1 0.7%	3 2.1%	8 1.0%
Number of respondents	139	130	133	131	137	140	810
Number of nonrespondents	6	6	8	4	3	5	32
Final Survey (n, %)							
The information was helpful because it was new to me.	11 23.9%	4 10.5%	5 10.6%	4 10.0%	6 14.0%	9 13.6%	39 13.9%
The information was helpful. I [participant] knew the information, but it was good to hear it again.	32 69.6%	26 68.4%	32 68.1%	28 70.0%	23 53.5%	40 60.6%	181 64.6%
The information was not that helpful because I [participant] already knew it.	3 6.5%	8 21.1%	10 21.3%	6 15.0%	14 32.6%	16 24.2%	57 20.4%
The information was not that helpful because it did not apply to me.	0 0.0%	0 0.0%	0 0.0%	2 5.0%	0 0.0%	1 1.5%	3 1.1%
Number of respondents	46	38	47	40	43	66	280
Number of nonrespondents	8	3	4	2	0	2	19

Source: Participant Surveys, Initial and Final

Exhibit I-17. Summary of Covariates Used in the Site-Level Analyses by Site

	A	B	C	D	E	F	p-value
Mean age of nutrition educators (years) ^a	43.4	39.5	39.6	39.0	42.7	44.7	<.0001
Percentage of nutrition education staff at site who are an RD or an LD/LN ^a	50%	0%	40%	60%	40%	40%	.0063
Percentage of nutrition education staff at site who have bachelor's or graduate degree ^a	60%	100%	90%	80%	60%	50%	.0002
Percentage of nutrition education staff at site who have received training in group facilitation in past 12 months ^a	100%	0%	40%	20%	30%	30%	.0502
Percentage of nutrition education staff at site who have received training in VENA, participant-centered practices, and related skills in past 12 months ^a	100%	30%	70%	70%	80%	70%	.0005
Mean number of years of experience nutrition education staff at site have providing WIC nutrition education ^a	6.3	17.3	8.9	10.5	7.7	8.7	.0016
Average caseload of site (average number of food packages) ^b	1,836	1,355	2,923	5,748	3,268	1,882	.0074
Nutrition educator full-time-equivalent (FTE)-to-client ratio ^b	303	542	400	402	491	314	.0001
Index describing observed educators' adherence to VENA/participant-centered principles ^c	22.9	61.4	53.8	94.1	10.4	100.0	.0120

^a Source: Nutrition Educator Survey

^b Source: Phase I Site Survey and POC Interviews

^c Source: Observational data

Notes: *t* test used to identify outcome variables that differ among WIC sites. Site-level differences are statistically significant when $p \leq .05$.

APPENDIX J
CREATION OF THE DEPENDENT VARIABLES FOR THE OUTCOME
AND IMPACT ANALYSES

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Exhibit J-1. Measures Applicable for the Pregnant at Enrollment, Postpartum at Enrollment, and Caregiver with Child Enrollment Groups

Measure	Survey Responses	Analysis Variable	Rationale
Readiness to Change			
All families are different and eat different foods. At this time are you doing the following things...? (e.g., eat vegetables every day at dinner/serve child vegetables every day at dinner)	<p>Not thinking about doing it</p> <p>Thinking about doing it</p> <p>Planning on doing it next month</p> <p>Have been doing it for less than 6 months</p> <p>Have been doing it for longer than 6 months</p>	<p>Created 5-level ordinal variable, with 1 = not thinking about doing it; 2 = thinking about doing; ... 5 = have been doing it for longer than 6 months. Cumulative logit was used for the impact analysis, with "not thinking about it" used as the reference category.</p>	<p>The transtheoretical or stages of change model suggests that individuals move through different stages before adopting the desired behavior; thus, created ordinal variable for the analysis.</p>
Enjoyment of Foods			
Different people/children like different foods. How much do you/your child like ...? (fruits, vegetables, low-fat/fat-free milk, whole grains)	<p>Never tried</p> <p>Doesn't like at all</p> <p>Likes a little</p> <p>Likes a lot</p>	<p>Created binary variable: 1 = "likes a little" or "likes a lot"; 0 = other responses</p>	<p>A precursor to eating "healthy" foods is that the person likes the food; thus, WIC encourages participants to try fruit, vegetables, low-fat/fat-free milk, and whole grains (foods included in the WIC package) to encourage their consumption. The response options were dichotomized into two categories based on whether participants reported that they like the food a little or a lot versus do not like or never tried the food. Participants who have never tried the food were grouped with participants who do not like the food at all because WIC encourages participants to try healthy foods; thus, it would not be appropriate to exclude from the analysis participants who have never tried the food.</p>

(continued)

Exhibit J-1. Measures Applicable for the Pregnant at Enrollment, Postpartum at Enrollment, and Caregiver with Child Enrollment Groups (continued)

Measure	Survey Responses	Analysis Variable	Rationale
Self-efficacy for Eating/Feeding Behaviors	Not sure A little sure Very sure	Created 3-level ordinal variable: 1 = low ("not sure"); 2 = moderate ("a little sure"); 3 = high ("very sure"). Cumulative logit was used for the impact analysis, with "low" used as the reference category.	Created an ordinal variable for the analysis.
Food Acquisition and Management	Almost never Once in a while Sometimes Often Almost always	Created binary variable: 1 = "often" or "almost always"; 0 = other responses	The response set was dichotomized into two categories based on whether participants often or almost always adhere to WIC guidance for meal planning (e.g., https://www.choosemyplate.gov/myplate-mywins-tips-making-family-meals) and label reading (e.g., https://wicworks.fns.usda.gov/wicworks//Topics/PregnancyFactSheet.pdf). This split logically differentiates responses that demonstrate the preferred behavioral outcome from responses that do not.
Dietary Intake	Frequency of eating and drinking different foods/beverages (response set of "never" to "more than once a day")	Estimated dietary intake by food group using NHANES screener algorithm ^a	Used NHANES screener algorithm

(continued)

Exhibit J-1. Measures Applicable for the Pregnant at Enrollment, Postpartum at Enrollment, and Caregiver with Child Enrollment Groups (continued)

Measure	Survey Responses	Analysis Variable	Rationale
Physical Activity			
In the past 7 days, on how many days did you do moderate or vigorous physical activities like walking, jogging, dancing, or bicycling? Think only about physical activities that you did for at least 10 minutes at a time.	0 to 7 response set	To calculate the number of minutes of moderate or vigorous physical activity a week: (1) assigned value of 0 if answer to first question was 0. (2) If answer to first question was 1 to 7, calculated the average number of minutes by creating a continuous variable. The mean was assigned to the range: 25.5, 35.5, 45.5, 50.5, and 60 was assigned to "more than 60 min." Then, the number of minutes was multiplied by the number of days to calculate number of minutes per week of physical activity.	Used information on number of minutes of exercise per day and number of days of exercise per week to calculate number of minutes of exercise per week
(If ≠ 0) On the days that you did more than 10 minutes of moderate or vigorous physical activities, how many minutes in a day did you usually spend doing these physical activities?	21–30 minutes 31–40 minutes 41–50 minutes 51–60 minutes More than 60 minutes		

^a To estimate dietary intake, the National Health and Nutrition Examination Survey (NHANES) 26-item 2009–2010 Dietary Screener Questionnaire (self-administered version) was used (National Institutes of Health, National Cancer Institute, 2016). The Dietary Screener Questionnaire asks about the frequency of consumption in the past month of selected foods and drinks. Scoring algorithms available on the National Cancer Institute’s website (<https://epi.grants.cancer.gov/nhanes/dietscreen/programs.html>) were used to convert screener responses to estimates of daily dietary intake for fruit and vegetables (cup equivalents), dairy (cup equivalents), added sugars (tsp), added sugars from sugary beverages (tsp), whole grains (ounce equivalents), and fiber (g) for use in the outcome and impact analyses. For the caregiver with eligible child subpopulation, dietary intake was only estimated for cases in which the child was 24 months or older at baseline because the algorithms are not appropriate to use with children less than 24 months old.

Exhibit J-2. Measures Applicable for the Pregnant at Enrollment and Postpartum at Enrollment Groups

Measure	Survey Responses	Analysis Variable	Rationale
Eating Behaviors			
How often do these things happen? Eat meal while watching TV	Rarely or never Some days Most days Almost every day Every day	Created binary variable for the desired behavior: 1 = "almost never"; 0 = other responses.	The response set was dichotomized into two categories based on whether participants adhered to recommended guidelines for WIC settings from the Robert Wood Johnson Foundation's Healthy Eating Research program (Whaley, Pérez-Escamilla, Segura-Pérez, & Lott, 2017). The guidelines state, "avoid TV and other screen time during mealtimes," so the preferred behavioral outcome is "rarely or never." This split logically differentiates responses that demonstrate the preferred behavioral outcome from responses that do not.
How often do these things happen? Cook homemade dinner	Rarely or never Some days Most days Almost every day Every day	Created binary variable for the desired behavior: 1 = "almost every day" or "every day"; 0 = other responses.	The response set was dichotomized into two categories based on whether participants adhered to recommended feeding guidelines almost every day or every day (Whaley et al., 2017). This split logically differentiates responses that demonstrate the preferred behavioral outcome from responses that do not.
How many times per week do you do the following things...?			
Eat breakfast	0 to 7 days	No recoding	No recoding
Eat out	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding
Eat fast food	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding

(continued)

Exhibit J-2. Measures Applicable for the Pregnant at Enrollment and Postpartum at Enrollment Groups (continued)

Measure	Survey Responses	Analysis Variable	Rationale
Physical Activity			
Think about what you do in a usual week or day. How many times do you do the following things? I watch TV or DVDs ____ hours a day	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding
Self-efficacy for breastfeeding infant until at least 6 months old ^a			
How sure are you that you can breastfeed your baby until s/he is at least 6 months old?	I am not breastfeeding Not sure A little sure Very sure	Created 3-level ordinal variable: 1 = low ("not sure"); 2 = moderate ("a little sure"); 3 = high ("very sure"). Participants who were not breastfeeding were excluded from the analysis because they have already made the decision to not breastfeed. Assessed at final period for pregnant women; not assessed for postpartum women because at interim their infants would be older than 6 months. Cumulative logit was used for the impact analysis, with "low" used as the reference category.	Created an ordinal variable for the analysis.
Self-efficacy for breastfeeding infant until at least 1 year old ^a			
How sure are you that you can breastfeed your baby until s/he is at least 1 year old?	I am not breastfeeding Not sure A little sure Very sure	Same as above, except assessed at final period for pregnant women and interim period for postpartum women (before infant is 1 year old). Cumulative logit was used for the impact analysis, with "low" used as the reference category.	Created an ordinal variable for the analysis.

(continued)

Exhibit J-2. Measures Applicable for the Pregnant at Enrollment and Postpartum at Enrollment Groups (continued)

Measure	Survey Responses	Analysis Variable	Rationale
Self-efficacy for Breastfeeding Exclusivity^a			
How sure are you that you can only breastfeed and never give formula?	I am not breastfeeding Not sure A little sure Very sure	Same as above.	Same as above.
Breastfeeding Intentions^a			
Are you trying to breastfeed Breastfeed my baby until she/he is at least 6 months old Breastfeed my baby until she/he is at least 12 months old Only breastfeed my baby and never give any formula for first year of his/her life	Not thinking about it Thinking about it Planning on doing it Already doing it	1 = not thinking about it; 2 = thinking about it; 3 = planning on doing it; 4 = already doing it. Assessed at final period for pregnant women and interim period for postpartum women to measure intentions before infant is 12 months old. Note that 6-months intention was not assessed for pregnant women who enrolled in their third trimester or women who were postpartum at enrollment because infant may be older than 6 months at data collection period.	Unlike the other outcome variables, a binary variable was not created because this outcome measures intentions instead of actual behavior; thus, it is not appropriate to evaluate adherence to the practice recommended by WIC. Instead, it was treated as a continuous variable.

(continued)

Exhibit J-2. Measures Applicable for the Pregnant at Enrollment and Postpartum at Enrollment Groups (continued)

Measure	Survey Responses	Analysis Variable	Rationale
Breastfeeding Duration ^a			
How old was your baby when you completely stopped breastfeeding or feeding breast milk from a bottle?	Less than 1 month old 1–2 months old 3–5 months old 6 or more months old I never fed my baby breast milk I am still feeding my baby breast milk	Respondents assigned to one of three categories based on their response: Never breastfed infant: responded “I never fed my baby breastmilk”; Initiated breastfeeding but stopped breastfeeding before infant was 6 months old: responded “Less than 1 mo old, 1–2 mo old, or 3–5 mo old”; or Initiated breastfeeding and breastfed until at least 6 months old: responded “6 mo or more” or “I am still feeding my baby breast milk.” Assessed at final period for pregnant and postpartum women to measure duration.	See description of recoding

^a Outcome was evaluated at one time period only.

Exhibit J-3. Measures Applicable for Only the Caregiver with Child Enrollment Group

Measure	Survey Responses	Analysis Variable	Rationale
Child Eating Behaviors			
How often do these things happen? Child eats meal while watching TV/DVDs	Rarely or never Some days Most days Almost every day Every day	Created binary variable for the desired behavior: 1 = "almost never" ; 0 = other responses.	The response set was dichotomized into two categories based on whether participants adhered to recommended guidelines for WIC settings from the Robert Wood Johnson Foundation's Healthy Eating Research program (Whaley et al., 2017). The guidelines state, "avoid TV and other screen time during mealtimes," so the preferred behavioral outcome is "almost never." This split logically differentiates responses that demonstrate the preferred behavioral outcome from responses that do not.
How often do these things happen? Caregiver sits and eats meals with child Caregiver cooks homemade dinner for child	Rarely or never Some days Most days Almost every day Every day	Created binary variable for the desired behavior: 1 = "almost every day" or "every day"; 0 = other responses.	The response set was dichotomized into two categories based on whether participants adhered to recommended feeding guidelines almost every day or every day (Whaley et al., 2017). This split logically differentiates responses that demonstrate the preferred behavioral outcome from responses that do not.
How many times per week do you do the following things?			
Child eats breakfast	0 to 7 days	No recoding	No recoding
Household eats out	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding
Child eats fast food	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding

(continued)

Exhibit J-3. Measures Applicable for Only the Caregiver with Child Enrollment Group (continued)

Measure	Survey Responses	Analysis Variable	Rationale
How many times do you usually offer a new food before you decide your child doesn't like it?	Once Twice 3 to 5 times 6 to 10 times More than 10 times My child likes everything My child hasn't tried new foods	Recoded "once" as 1, "twice" as 2, "3 to 5" as 4, "6 to 10" as 8, and "more than 10 times" as 11. Excludes the responses "my child likes everything" and "my child hasn't tried new foods."	Transformed to numerical values so that the variable could be treated as a continuous measure and a mean estimated. The nature of the response options allowed for the coding of the values as numeric values by taking the mean of the ranges and assigning a value of 11 to the "more than 10 times category."
Child Feeding Practices			
<u>Practices to Encourage</u>			
How often did you do the following things? Keep track of what child eats and drinks Talked to child to encourage to eat or drink	Almost never Once in a while Sometimes Often Almost always	Created binary variable for the desired behavior: 1 = "often" or "almost always"; 0 = other responses	The Infant Feeding Style Questionnaire (Thompson, Adair, & Bentley, 2013) was used to assess child feeding practices or the caregiver's "style" of feeding. These behaviors are recommended (Whaley et al., 2017). The response set was dichotomized into two categories based on whether participants often or almost always exhibit the desired behavior. This split logically differentiates responses that demonstrate the preferred behavioral outcome from responses that do not.

(continued)

Exhibit J-3. Measures Applicable for Only the Caregiver with Child Enrollment Group (continued)

Measure	Survey Responses	Analysis Variable	Rationale
<u>Practices to Discourage</u>			
How often did you do the following things?	Almost never Once in a while Sometimes Often Almost always	Created binary variable for the desired behavior: 1 = "almost never" or "once in a while"; 0 = other responses	The Infant Feeding Style Questionnaire (Thompson, Adair, & Bentley, 2013) was used to assess child feeding practices or the caregiver's "style" of feeding. These behaviors are not recommended because the caregiver is controlling how the child eats (Whaley et al., 2017). The response set was dichotomized into two categories based on whether participants exhibited the behavior almost never or once in a while. This split logically differentiates responses that demonstrate the preferred behavioral outcome (i.e., in this case, not doing the behavior) from responses that do not.
Tried to get child to finish food and drinks			
Tried to get child to eat even if does not seem hungry			
Carefully controlled how much child eats or drinks			
Let child eat desserts/sweets to keep happy			
Physical Activity			
Think about what you do in a usual week or day. How many times do you do the following things?			
Hours caregiver watches TV or DVDs daily	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding
Days per week caregiver plays outside with child	0 to 7	No recoding	No recoding
Hours per week child plays outside	0 to "8 or more"	"8 or more" was assigned a value of 8	See description of recoding

(continued)

Exhibit J-3. Measures Applicable for Only the Caregiver with Child Enrollment Group (continued)

Measure	Survey Responses	Analysis Variable	Rationale
Hours child spends on screen time daily	0 to "8 or more"	Sum of responses to two questions with a "1" to "8 or more" response set: hours a day child watches TV/DVDs and hours a day child plays video or computer games; "8 or more" was assigned a value of 8 to calculate a mean	See description of recoding

Sources: Thompson, A. L., Adair, L. S., & Bentley, M. E. (2013). Pressuring and restrictive feeding styles influence infant feeding and size among a low-income African-American sample. *Obesity, 21*(3), 562–571. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3630475/>

Robert Wood Johnson Foundation. (2017, May). Feeding infants and young toddlers: Using the latest evidence in WIC settings. Healthy Eating Research. Issue Brief. Retrieved from http://healthyeatingresearch.org/wp-content/uploads/2017/05/her_wic_051817-FINAL.pdf

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APPENDIX K
ADDITIONAL RESULTS FOR THE DESCRIPTIVE AND OUTCOME
ANALYSES

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Exhibit K-1. Demographic and Household Characteristics for Study Participants: Women Who Were Pregnant at Enrollment

Characteristic	Initial		Final	
	N	%	N	%
Age (mean, SD)	154	(26.4, 5.8)	—	—
Race/ethnicity				
Hispanic	35	23.3	—	—
White, non-Hispanic	84	56.0	—	—
Black or African American, non-Hispanic	20	13.3	—	—
Asian, non-Hispanic	5	3.3	—	—
Other, non-Hispanic ^a	6	4.0	—	—
Nonrespondents	4		—	—
Language(s) spoken at home				
English only	112	74.2	—	—
Spanish only	13	8.6	—	—
Both English and Spanish	17	11.3	—	—
Other ^b	9	6.0	—	—
Nonrespondents	3		—	—
Education				
Less than high school	24	16.7	—	—
High school graduate	54	37.5	—	—
Some college or associate's degree	56	38.9	—	—
College degree	10	6.9	—	—
Nonrespondents	10		—	—
Marital status				
Living with partner or married	75	50.0	38	56.7
Widowed, divorced, or separated	12	8.0	4	6.0
Single or never married	63	42.0	25	37.3
Nonrespondents	4		2	
Employment status				
Full time	27	18.0	12	17.4
Part time	35	23.3	20	29.0
Not working	88	58.7	37	53.6
Nonrespondents	4		0	

(continued)

Exhibit K-1. Demographic and Household Characteristics for Study Participants: Women Who Were Pregnant at Enrollment (continued)

Characteristic	Initial		Final	
	N	%	N	%
Health conditions				
Anemia	29	19.6	15	22.1
Excessive weight gain	8	5.6	5	7.2
Diabetes, gestational diabetes, or high blood sugar	9	6.2	6	8.7
High blood pressure	4	2.8	8	11.6
Has one or more risk factors	43	28.7	20	29.0
None of the above	107	71.3	49	71.0
Nonrespondents	4		0	
Size of household (mean, SD)	154	(2.8, 1.5)	69	(4.1, 1.6)
Single-adult household	71	46.1	20	29.0
Food-insecure household	116	75.8	50	73.5
Number of respondents (range) ^c	142–154		67–69	

Source: Participant Surveys, Initial and Final (timing of data collection varied depending on the participant's trimester at enrollment). Tabulations are for all participants responding for that time period.

^a Other includes the following responses: Native Hawaiian or other Pacific Islander, American Indian, or Alaska Native and those who selected more than one category; excludes those who chose Hispanic as one category.

^b Other includes the following responses: English and other, Spanish and other, and other only.

^c A range is provided because the number of respondents varied by question.

SD = standard deviation, — = not asked

Exhibit K-2. Demographic and Household Characteristics for Study Participants: Women Who Were Postpartum at Enrollment

Characteristic	Initial		Final	
	N	%	N	%
Age (mean, SD)	182	(26.9, 6.5)	—	—
Race/ethnicity				
Hispanic	28	15.6	—	—
White, non-Hispanic	107	59.8	—	—
Black or African American, non-Hispanic	34	19.0	—	—
Asian, non-Hispanic	6	3.4	—	—
Other, non-Hispanic ^a	4	2.2	—	—
Nonrespondents	3		—	—
Language(s) spoken at home				
English only	149	82.3	—	—
Spanish only	14	7.7	—	—
Both English and Spanish	10	5.5	—	—
Other ^b	8	4.4	—	—
Nonrespondents	1		—	—
Education				
Less than high school	34	19.2	—	—
High school graduate	64	36.2	—	—
Some college or associate's degree	63	35.6	—	—
College degree	16	9.0	—	—
Nonrespondents	5		—	—
Marital status				
Living with partner or married	95	52.8	51	63.0
Widowed, divorced, or separated	16	8.9	3	3.7
Single or never married	69	38.3	27	33.3
Nonrespondents	2		8	
Employment status				
Full time	26	14.7	21	23.9
Part time	23	13.0	17	19.3
Not working	128	72.3	50	56.8
Nonrespondents	5		1	

(continued)

Exhibit K-2. Demographic and Household Characteristics for Study Participants: Women Who Were Postpartum at Enrollment (continued)

Characteristic	Initial		Final	
	N	%	N	%
Health conditions				
Anemia	66	37.1	15	17.2
Excessive weight gain	17	9.6	8	9.3
Diabetes, gestational diabetes, or high blood sugar	16	9.0	4	4.7
High blood pressure	23	12.9	4	4.7
Has one or more risk factors	85	47.5	25	28.7
None of the above	94	52.5	62	71.3
Nonrespondents	3		2	
Size of household (mean, SD)	182	(3.7, 1.8)	89	(4.2, 1.5)
Single-adult household	79	43.4	28	31.5
Food-insecure household	123	68.0	59	68.6
Number of respondents (range) ^c	177–182		81–89	

Source: Participant Surveys, Initial, July 2015; Final, ~12 months after enrollment. Tabulations are for all participants responding at that time period.

^a Other includes the following responses: Native Hawaiian or other Pacific Islander, American Indian, or Alaska Native and those who selected more than one category; excludes those who chose Hispanic as one category.

^b Other includes the following responses: English and other, Spanish and other, and other only.

^c A range is provided because the number of respondents varied by question.

SD = standard deviation, — = not asked

Exhibit K-3. Demographic and Household Characteristics for Study Participants: Caregivers with Eligible Child

Characteristic	Initial		Final	
	N	%	N	%
Target Child ^a				
Age (mean months, SD) ^b	500	(23.3,12.3)	—	—
Age distribution for initial survey ^c				
Up to 12 months old	120	23.7	—	—
12 months to up to 24 months	156	30.8	—	—
Two years or older	230	45.5	—	—
Nonrespondents	0	0.0	—	—
Gender (% female)	233	46.0	—	—
Adult Participant				
Age (mean years, SD)	506	(29.5, 7.2)	—	—
Gender (% female)	479	94.7	—	—
Race/ethnicity				
Hispanic	88	17.6	—	—
White, non-Hispanic	297	59.3	—	—
Black or African American, non-Hispanic	89	17.8	—	—
Asian, non-Hispanic	14	2.8	—	—
Other, non-Hispanic ^d	13	2.6	—	—
Nonrespondents	5		—	—
Language(s) spoken at home				
English only	384	76.5	—	—
Spanish only	41	8.2	—	—
Both English and Spanish	36	7.2	—	—
Other ^e	41	8.2	—	—
Nonrespondents	4		—	—
Education				
Less than high school	82	16.8	—	—
High school graduate	172	35.3	—	—
Some college or associate's degree	183	37.6	—	—
College degree	50	10.3	—	—
Nonrespondents	19		—	—

(continued)

Exhibit K-3. Demographic and Household Characteristics for Study Participants: Caregivers with Eligible Child (continued)

Characteristic	Initial		Final	
	N	%	N	%
Marital status				
Living with partner or married	282	57.4	183	62.9
Widowed, divorced, or separated	46	9.4	21	7.2
Single or never married	163	33.2	87	29.9
Nonrespondents	15		4	
Employment status				
Full time	120	24.2	70	24.4
Part time	109	22.0	80	27.9
Not working	267	53.8	137	47.7
Nonrespondents	10		8	
Health conditions for target child ^f				
Was a preemie or premature as baby	49	10.0	22	7.7
Needs special infant formula	52	10.7	13	4.5
Is low weight	37	7.7	23	8.0
Is overweight	17	3.5	11	3.9
Has high blood lead	4	0.8	2	0.7
Has one or more risk factors	113	22.9	52	17.9
Has no risk factors	381	77.1	239	82.1
Nonrespondents	12		4	
Size of household (mean, SD)	506	(3.9, 1.9)	295	(4.4, 2.2)
Single-adult household	215	42.5	87	29.5
Food-insecure household	354	71.2	184	63.4
Number of respondents (range) ^g	481–506		285–295	

Source: Participant Surveys, Initial, July 2015; Final, ~12 months after enrollment. Tabulations are for all participants responding for that time period.

^a If there was more than one eligible child in the household, then a child was randomly selected, and the participant was asked to complete the survey for this child (i.e., target child).

^b Mean age is based on responses to birthdate of child collected in the screener. Excludes 6 respondents who had inconsistent responses for age of child and response to Question 2 in the enrollment survey, which asked if child was up to 12 months old or older.

^c Frequency based on responses to birthdate of child collected in the screener. For the 6 respondents with inconsistent data, the respondent was assigned to a category based on their response to Question 2 on age category of child.

^d Other includes the following responses: Native Hawaiian or other Pacific Islander, American Indian, or Alaska Native and those who selected more than one category; excludes those who chose Hispanic as one category.

^e Other includes the following responses: English and other, Spanish and other, and other only.

^f Respondents could select more than one response, so percentages may sum to more than 100%.

^g A range is provided because the number of respondents varied by question.

SD = standard deviation, — = not asked for that time period

Exhibit K-4. WIC and Other Food Assistance Experience for Women Who Were Pregnant at Enrollment: Participants for Pilot Study

Characteristic	Initial		Final	
	N	%	N	%
Number of people in household currently receiving WIC benefits (mean, SD)	154	(1.5, 0.9)	69	(1.6, 0.8)
Currently receiving other assistance ^a				
SNAP	63	43.2	38	55.1
Medicaid	70	47.9	31	44.9
Other	24	16.4	17	24.6
On one or more assistance program	98	67.1	51	73.9
None of the above	48	32.9	18	26.1
Nonrespondents	8		0	
Currently not receiving assistance, but have in the past ^{a, b}				
SNAP	25	35.7	—	—
Medicaid	9	12.9	—	—
Other	30	42.9	—	—
Never received any assistance except for WIC	17	24.3	—	—
Nonrespondents	84		—	—
Length of time receiving WIC benefits (n, %)				
Less than 30 days	33	23.2	—	—
1 month to a year	40	28.2	—	—
1–2 years	28	19.7	—	—
3–4 years	17	12.0	—	—
5 or more	24	16.9	—	—
Nonrespondents	12		—	—
Purchase of WIC foods—Juice				
Purchased	—	—	48	71.6
Did not purchase	—	—	6	9.0
Did not receive from WIC	—	—	13	19.4
Nonrespondents	—	—	2	
Purchase of WIC foods—Fruit and vegetables				
Purchased	—	—	51	75.0
Did not purchase	—	—	3	4.4
Did not receive from WIC	—	—	14	20.6
Nonrespondents	—	—	1	

(continued)

Exhibit K-4. WIC and Other Food Assistance Experience for Women Who Were Pregnant at Enrollment: Participants for Pilot Study (continued)

Characteristic	Initial		Final	
	N	%	N	%
Purchase of WIC foods—Milk				
Purchased	—	—	47	69.1
Did not purchase	—	—	7	10.3
Did not receive from WIC	—	—	14	20.6
Nonrespondents	—	—	1	
Purchase of WIC foods—Cereal				
Purchased	—	—	50	73.5
Did not purchase	—	—	6	8.8
Did not receive from WIC	—	—	12	17.6
Nonrespondents	—	—	1	
Purchase of WIC foods—Other whole grains				
Purchased	—	—	43	63.2
Did not purchase	—	—	10	14.7
Did not receive from WIC	—	—	15	22.1
Nonrespondents	—	—	1	
Purchase of WIC foods—Baby food in jars				
Purchased	—	—	32	48.5
Did not purchase	—	—	17	25.8
Did not receive from WIC	—	—	17	25.8
Nonrespondents	—	—	3	
Purchase of WIC foods—Infant formula				
Purchased	—	—	44	64.7
Did not purchase	—	—	8	11.8
Did not receive from WIC	—	—	16	23.5
Nonrespondents	—	—	1	
Number of respondents (range) ^c	70–154		69–69	

Source: Participant Surveys, Initial, and Final (timing of data collection varied depending on the participant's trimester at enrollment). Tabulations are for all participants responding for that time period.

^a Respondents could select more than one response, so percentages may sum to more than 100%. Other includes TANF or welfare, Head Start, and food bank/pantry.

^b This question had a high level of item nonresponse; 55% of respondents did not answer this question or did not provide a valid response.

^c A range is provided because the number of respondents varied by question.

SD = standard deviation, — = not asked

Exhibit K-5. WIC and Other Food Assistance Experience for Women Who Were Postpartum at Enrollment: Participants for Pilot Study

Characteristic	Initial		Final	
	N	%	N	%
Number of people in household currently receiving WIC benefits (mean, SD)	173	(2.4, 1.2)	89	(1.6, 0.7)
Currently receiving other assistance ^a				
SNAP	104	57.8	48	57.1
Medicaid	85	47.2	37	44.0
Other	28	15.6	18	21.4
On one or more assistance program	139	77.2	64	76.2
None of the above	41	22.8	20	23.8
Nonrespondents	2		5	
Currently not receiving assistance, but have in the past ^{a, b}				
SNAP	18	23.7	—	—
Medicaid	7	9.2	—	—
Other	42	55.3	—	—
Never received any assistance except for WIC	16	21.1	—	—
Nonrespondents	106		—	—
Length of time receiving WIC benefits				
Less than 30 days	31	17.4	—	—
1 month to a year	59	33.1	—	—
1–2 years	30	16.9	—	—
3–4 years	27	15.2	—	—
5 or more	31	17.4	—	—
Nonrespondents	4		—	—
Purchase of WIC foods—Juice				
Purchased	—	—	60	69.0
Did not purchase	—	—	11	12.6
Did not receive from WIC	—	—	16	18.4
Nonrespondents	—	—	2	
Purchase of WIC foods—Fruit and vegetables				
Purchased	—	—	66	75.9
Did not purchase	—	—	6	6.9
Did not receive from WIC	—	—	15	17.2
Nonrespondents	—	—	2	

(continued)

Exhibit K-5. WIC and Other Food Assistance Experience for Women Who Were Postpartum at Enrollment: Participants for Pilot Study (continued)

Characteristic	Initial		Final	
	N	%	N	%
Purchase of WIC foods—Milk				
Purchased	—	—	65	74.7
Did not purchase	—	—	6	6.9
Did not receive from WIC	—	—	16	18.4
Nonrespondents	—	—	2	
Purchase of WIC foods—Cereal				
Purchased	—	—	66	75.9
Did not purchase	—	—	7	8.0
Did not receive from WIC	—	—	14	16.1
Nonrespondents	—	—	2	
Purchase of WIC foods—Other whole grains				
Purchased	—	—	60	69.0
Did not purchase	—	—	12	13.8
Did not receive from WIC	—	—	15	17.2
Nonrespondents	—	—	2	
Purchase of WIC foods—Baby food in jars				
Purchased	—	—	27	31.8
Did not purchase	—	—	36	42.4
Did not receive from WIC	—	—	22	25.9
Nonrespondents	—	—	4	
Purchase of WIC foods—Infant formula				
Purchased	—	—	30	34.9
Did not purchase	—	—	32	37.2
Did not receive from WIC	—	—	24	27.9
Nonrespondents	—	—	3	
Number of respondents (range) ^c	76–180		84–89	

Source: Participant Surveys, Initial, July 2015; Final, ~12 months after enrollment. Tabulations are for all participants responding at that time period.

^a Respondents could select more than one response, so percentages may sum to more than 100%. Other includes TANF or welfare, Head Start, and food bank/pantry.

^b This question had a high level of item nonresponse; 58% of respondents did not answer this question or did not provide a valid response.

^c A range is provided because the number of respondents varied by question.

SD = standard deviation, — = not asked

Exhibit K-6. WIC and Other Food Assistance Experience for Caregivers with Eligible Child: Participants for Pilot Study

Characteristic	Initial		Final	
	N	%	N	%
Number of people in household currently receiving WIC benefits (mean, SD)	337	(1.9, 1.1)	295	(1.6, 0.9)
Currently receiving other assistance ^a (n, %)				
SNAP	272	54.9	146	51.4
Medicaid	259	52.3	157	55.3
Other	106	21.4	67	23.6
On one or more assistance programs	392	79.2	224	78.9
Not receiving any other assistance except for WIC	103	20.8	68	23.9
Nonrespondents	11		11	
Currently not receiving assistance, but have in the past ^{a, b}				
SNAP	90	37.0	—	—
Medicaid	37	15.2	—	—
Other	121	49.8	—	—
Never received any assistance except for WIC	36	14.8	—	—
Nonrespondents	263 ^b		—	—
Length of time receiving WIC benefits				
Less than 30 days	17	3.5	—	—
1 month to a year	80	16.4	—	—
1–2 years	155	31.8	—	—
3–4 years	122	25.0	—	—
5 or more	114	23.4	—	—
Nonrespondents	18			
Purchase of WIC foods—Juice				
Yes	—	—	229	79.5
No	—	—	17	5.9
Did not receive from WIC	—	—	42	14.6
Nonrespondents	—	—	7	
Purchase of WIC foods—Fruit and vegetables				
Yes	—	—	239	82.4
No	—	—	8	2.8
Did not receive from WIC	—	—	43	14.8
Nonrespondents	—	—	5	

(continued)

Exhibit K-6. WIC and Other Food Assistance Experience for Caregivers with Eligible Child: Participants for Pilot Study (continued)

Characteristic	Initial		Final	
	N	%	N	%
Purchase of WIC foods—Milk				
Purchased	—	—	232	80.0
Did not purchase	—	—	16	5.5
Did not receive from WIC	—	—	42	14.5
Nonrespondents	—	—	5	
Purchase of WIC foods—Cereal				
Purchased	—	—	224	78.3
Did not purchase	—	—	19	6.6
Did not receive from WIC	—	—	43	15.0
Nonrespondents	—	—	9	
Purchase of WIC foods—Other whole grains				
Purchased	—	—	217	75.9
Did not purchase	—	—	27	9.4
Did not receive from WIC	—	—	42	14.7
Nonrespondents	—	—	9	
Purchase of WIC foods—Baby food in jars ^c				
Purchased	—	—	11	7.3
Did not purchase	—	—	60	40.0
Did not receive from WIC	—	—	79	52.7
Nonrespondents	—	—	83	
Purchase of WIC foods—Infant formula ^c				
Purchased	—	—	16	10.7
Did not purchase	—	—	57	38.3
Did not receive from WIC	—	—	76	51.0
Nonrespondents	—	—	84	
Number of respondents (range) ^d			149–295	

Source: Participant Surveys, Initial, July 2015; Final, ~12 months after enrollment. Tabulations are for all participants responding for that time period.

^a Respondents could select more than one response, so percentages may sum to more than 100%. Other includes TANF or welfare, Head Start, and food bank/pantry.

^b This question had a high level of item nonresponse; 52% of respondents did not answer this question or did not provide a valid response.

^c Participants with a child younger than 12 months did not answer this question (n = 62).

^d A range is provided because the number of respondents varied by question.

SD = standard deviation, — = not asked for that time period

Exhibit K-7. Community and Resource Context for Women Who Were Pregnant at Enrollment: Participants for Pilot Study

Characteristic	Initial		Final	
	N	Mean (SD)	N	Mean (SD)
Social support by friends and family ^a				
Friends/family encourage eating healthy	152	3.9 (1.2)	69	3.6 (1.4)
Friends/family complain about eating healthy	148	1.7 (1.2)	69	2.0 (1.4)
Friends/family encourage physical activity	151	3.5 (1.3)	69	3.4 (1.5)
Friends/family do physical activity with respondent	151	3.2 (1.3)	69	2.9 (1.5)
Fruit and vegetable availability ^b				
Easy to buy fresh fruit and vegetables	154	3.7 (0.6)	68	3.6 (0.7)
Large selection of fresh fruit and vegetables	153	3.5 (0.7)	68	3.4 (0.7)
Fresh fruit and vegetables are high quality	153	3.1 (0.8)	68	2.9 (0.8)
Expensive to buy fresh fruit and vegetables	153	3.2 (0.9)	67	3.3 (0.9)
Number of respondents (range) ^c	148–154		67–69	

Source: Participant Surveys, Initial and Final (timing of data collection varied depending on the participant's trimester at enrollment). Tabulations are for all participants responding for that time period.

^a Mean score is on a 5-point response set: 1 = "almost never," 2 = "once in a while," 3 = "sometimes," 4 = "often," 5 = "almost always."

^b Mean score is on a 4-point response set: 1 = "disagree a lot," 2 = "disagree a little," 3 = "agree a little," 4 = "agree a lot."

^c A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-8. Community and Resource Context for Women Who Were Postpartum at Enrollment: Participants for Pilot Study

Characteristic	Initial		Final	
	N	Mean (SD)	N	Mean (SD)
Social support by friends and family ^a				
Friends/family encourage eating healthy	180	3.3 (1.4)	88	3.0 (1.5)
Friends/family complain about eating healthy	180	1.7 (1.0)	88	2.4 (1.5)
Friends/family encourage physical activity	180	3.1 (1.4)	88	3.0 (1.4)
Friends/family do physical activity with respondent	180	2.8 (1.4)	88	2.8 (1.4)
Fruit and vegetable availability ^b				
Easy to buy fresh fruit and vegetables	182	3.7 (0.6)	88	3.6 (0.7)
Large selection of fresh fruit and vegetables	181	3.5 (0.7)	88	3.4 (0.8)
Fresh fruit and vegetables are high quality	181	3.2 (0.8)	88	3.0 (0.9)
Expensive to buy fresh fruit and vegetables	181	3.1 (0.9)	88	3.3 (0.8)
Number of respondents (range) ^c	180–182		88–88	

Source: Participant Surveys, Initial, July 2015; Final, ~12 months after enrollment. Tabulations are for all participants responding at that time period.

^a Mean score is on a 5-point response set: 1 = “almost never,” 2 = “once in a while,” 3 = “sometimes,” 4 = “often,” 5 = “almost always.”

^b Mean score is on a 4-point response set: 1 = “disagree a lot,” 2 = “disagree a little,” 3 = “agree a little,” 4 = “agree a lot.”

^c A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-9. Community and Resource Context for Caregivers with Eligible Child: Participants for Pilot Study

Characteristic	Initial		Final	
	N	Mean (SD)	N	Mean (SD)
Social support by friends and Family ^a				
Friends/family encourage eating healthy	489	3.4 (1.5)	291	3.2 (1.5)
Friends/family complain about eating healthy	479	1.9 (1.2)	290	2.0 (1.2)
Friends/family encourage physical activity	481	3.2 (1.4)	290	3.0 (1.5)
Friends/family do physical activity with respondent	485	3.1 (1.4)	290	2.9 (1.5)
Fruit and vegetable availability ^b				
Easy to buy fresh fruit and vegetables	502	3.7 (0.6)	293	3.6 (0.7)
Large selection of fresh fruit and vegetables	500	3.6 (0.7)	292	3.5 (0.8)
Fresh fruit and vegetables are high quality	500	3.2 (0.8)	293	3.2 (0.9)
Expensive to buy fresh fruit and vegetables	502	3.1 (0.9)	292	3.2 (0.9)
Number of respondents (range) ^c	479–502		290–293	

Source: Participant Surveys, Initial, July 2015; Final, ~12 months after enrollment. Tabulations are for all participants responding for that time period.

^a Mean score is on a 5-point response set: 1 = “almost never,” 2 = “once in a while,” 3 = “sometimes,” 4 = “often,” 5 = “almost always.”

^b Mean score is on a 4-point response set: 1 = “disagree a lot,” 2 = “disagree a little,” 3 = “agree a little,” 4 = “agree a lot.”

^c A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-10. Outcome Analysis for Readiness to Change Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1a)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to eat vegetables at dinner every day						
Not thinking about doing it	3.0 (3)	3.0 (3)	.6427	4.6 (3)	0.0 (0)	.0148 *
Thinking about doing it	11.1 (11)	8.1 (8)		15.4 (10)	7.7 (5)	
Planning on doing it next month	12.1 (12)	12.1 (12)		10.8 (7)	9.2 (6)	
Have been doing it for less than 6 months	17.2 (17)	21.2 (21)		12.3 (8)	18.5 (12)	
Have been doing it for 6 months or longer	56.6 (56)	55.6 (55)		56.9 (37)	64.6 (42)	
Readiness to eat fruit for snack instead of cookies or chips every day						
Not thinking about doing it	1.0 (1)	3.1 (3)	.3877	1.5 (1)	3.1 (2)	.6229
Thinking about doing it	6.2 (6)	7.2 (7)		7.7 (5)	7.7 (5)	
Planning on doing it next month	9.3 (9)	11.3 (11)		12.3 (8)	12.3 (8)	
Have been doing it for less than 6 months	33.0 (32)	29.9 (29)		29.2 (19)	27.7 (18)	
Have been doing it for 6 months or longer	50.5 (49)	48.5 (47)		49.2 (32)	49.2 (32)	
Readiness to drink low-fat (1%) or fat-free/skim milk instead of whole milk or 2% (reduced fat) milk every day						
Not thinking about doing it	18.8 (18)	15.6 (15)	.0334 *	17.2 (11)	17.2 (11)	.2457
Thinking about doing it	9.4 (9)	7.3 (7)		9.4 (6)	9.4 (6)	
Planning on doing it next month	9.4 (9)	4.2 (4)		9.4 (6)	3.1 (2)	
Have been doing it for less than 6 months	22.9 (22)	17.7 (17)		29.7 (19)	14.1 (9)	
Have been doing it for 6 months or longer	39.6 (38)	55.2 (53)		34.4 (22)	56.3 (36)	

(continued)

Exhibit K-10. Outcome Analysis for Readiness to Change Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1a) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to almost always eat whole grain bread instead of white						
Not thinking about doing it	11.6 (11)	12.6 (12)	.6610	12.1 (8)	12.1 (8)	.6767
Thinking about doing it	10.5 (10)	9.5 (9)		9.1 (6)	13.6 (9)	
Planning on doing it next month	12.6 (12)	9.5 (9)		10.6 (7)	1.5 (1)	
Have been doing it for less than 6 months	23.2 (22)	18.9 (18)		21.2 (14)	16.7 (11)	
Have been doing it for 6 months or longer	42.1 (40)	49.5 (47)		47.0 (31)	56.1 (37)	
Readiness to almost always eat brown rice instead of white						
Not thinking about doing it	29.9 (29)	30.9 (30)	.5064	27.7 (18)	36.9 (24)	.7556
Thinking about doing it	23.7 (23)	20.6 (20)		23.1 (15)	15.4 (10)	
Planning on doing it next month	16.5 (16)	14.4 (14)		13.8 (9)	9.2 (6)	
Have been doing it for less than 6 months	17.5 (17)	14.4 (14)		24.6 (16)	10.8 (7)	
Have been doing it for 6 months or longer	12.4 (12)	19.6 (19)		10.8 (7)	27.7 (18)	
Readiness to almost always eat whole wheat or corn tortillas instead of white flour tortillas						
Not thinking about doing it	29.0 (27)	23.7 (22)	.7499	30.8 (20)	29.2 (19)	.7203
Thinking about doing it	17.2 (16)	19.4 (18)		15.4 (10)	21.5 (14)	
Planning on doing it next month	10.8 (10)	16.1 (15)		12.3 (8)	4.6 (3)	
Have been doing it for less than 6 months	17.2 (16)	16.1 (15)		15.4 (10)	9.2 (6)	
Have been doing it for 6 months or longer	25.8 (24)	24.7 (23)		26.2 (17)	35.4 (23)	

(continued)

Exhibit K-10. Outcome Analysis for Readiness to Change Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1a) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to a drink 100% juice no more than once a day						
Not thinking about doing it	7.2 (7)	7.2 (7)	.4326	9.2 (6)	9.2 (6)	.8513
Thinking about doing it	7.2 (7)	14.4 (14)		9.2 (6)	15.4 (10)	
Planning on doing it next month	16.5 (16)	15.5 (15)		13.8 (9)	10.8 (7)	
Have been doing it for less than 6 months	29.9 (29)	21.6 (21)		26.2 (17)	15.4 (10)	
Have been doing it for 6 months or longer	39.2 (38)	41.2 (40)		41.5 (27)	49.2 (32)	
Readiness to a drink regular soda or pop, sweetened fruit drinks, sports or energy drinks no more than once a month						
Not thinking about doing it	26.0 (25)	22.9 (22)	.5729	32.3 (21)	20.0 (13)	.7023
Thinking about doing it	11.5 (11)	20.8 (20)		10.8 (7)	24.6 (16)	
Planning on doing it next month	17.7 (17)	17.7 (17)		13.8 (9)	13.8 (9)	
Have been doing it for less than 6 months	16.7 (16)	13.5 (13)		13.8 (9)	10.8 (7)	
Have been doing it for 6 months or longer	28.1 (27)	25.0 (24)		29.2 (19)	30.8 (20)	
Number of respondents (range) ^b			93–99	64–66		

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

^a Indicates statistical significance if the p-value is ≤ .05.

^a Response categories can be mapped to the stages of change: not thinking about doing it = precontemplation, thinking about doing it = contemplation, planning on doing it next month = planning, have been doing it for less than 6 months = action, and have been doing it for 6 months or longer = maintenance. The distributions of responses are provided for the initial and interim time periods and the results of the Wilcoxon test for the within-person change over time between initial and interim, followed by the results for the initial versus final time period. The number of respondents for each comparison is the number of respondents who provided data at follow-up (interim or final).

^b A range is provided because the number of respondents varied by question.

Exhibit K-11. Outcome Analysis for Enjoyment of Food Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1a)

Measure ^a	Initial % (n)	Interim % (n)	Change ^b	McNemar's Test (<i>p</i> -value)	Initial % (n)	Final % (n)	Change ^c	McNemar's Test (<i>p</i> -value)
Like fruit	100.0 (100)	100.0 (100)	0.0	—	100.0 (67)	100.0 (67)	0.0	—
Like vegetables	97.0 (98)	100.0 (101)	3.0	—	94.0 (63)	98.5 (66)	4.5	.0833
Like low-fat (1%) or fat-free/skim milk	77.0 (77)	84.0 (84)	7.0	.1083	79.1 (53)	82.1 (55)	3.0	.5930
Like whole grains	96.0 (95)	90.9 (90)	-5.1	.1317	97.0 (65)	89.6 (60)	-7.5	.0588
Number of respondents (range) ^d			99–101				67	

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

^a Response categories were 1 = never tried, 2 = don't like at all, 3 = like a little, 4 = like a lot. Tabled values report the percentage of respondents who answered "like a little" or "like a lot" at initial, interim, and final.

^b Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported they like the food "a little" or "a lot" at interim.

^c Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported they like the food "a little" or "a lot" at final.

^d A range is provided because the number of respondents varied by question.

— = *p*-value could not be calculated because one or more of the point estimates was equal to zero.

Exhibit K-12. Outcome Analysis for Self-Efficacy for Eating Behavior Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1a)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Can eat vegetables at dinner every day						
Low	5.1 (5)	8.1 (8)	.5120	7.7 (5)	3.1 (2)	.1024
Moderate	19.2 (19)	17.2 (17)		24.6 (16)	20.0 (13)	
High	75.8 (75)	74.7 (74)		67.7 (44)	76.9 (50)	
Can eat fruit for snack instead of cookies or chips every day						
Low	1.0 (1)	3.1 (3)	.0197 *	1.5 (1)	1.5 (1)	.0057 **
Moderate	11.2 (11)	21.4 (21)		12.1 (8)	33.3 (22)	
High	87.8 (86)	75.5 (74)		86.4 (57)	65.2 (43)	
Can drink low-fat (1%) or fat-free/skim milk instead of whole milk or 2% (reduced fat) milk every day						
Low	15.2 (15)	17.2 (17)	.6446	13.6 (9)	21.2 (14)	.2850
Moderate	18.2 (18)	18.2 (18)		19.7 (13)	16.7 (11)	
High	66.7 (66)	64.6 (64)		66.7 (44)	62.1 (41)	
Can almost always eat whole grain bread instead of white						
Low	8.2 (8)	13.3 (13)	.7312	7.7 (5)	12.3 (8)	.5211
Moderate	30.6 (30)	17.3 (17)		27.7 (18)	23.1 (15)	
High	61.2 (60)	69.4 (68)		64.6 (42)	64.6 (42)	
Can almost always eat brown rice instead of white						
Low	24.7 (24)	35.1 (34)	.0589	23.8 (15)	38.1 (24)	.0184 *
Moderate	40.2 (39)	35.1 (34)		33.3 (21)	27.0 (17)	
High	35.1 (34)	29.9 (29)		42.9 (27)	34.9 (22)	

(continued)

Exhibit K-12. Outcome Analysis for Self-Efficacy for Eating Behavior Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1a) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Can almost always eat whole wheat or corn tortillas instead of white						
Low	21.4 (21)	25.5 (25)	.4909	26.2 (17)	32.3 (21)	.0540
Moderate	29.6 (29)	26.5 (26)		23.1 (15)	30.8 (20)	
High	49.0 (48)	48.0 (47)		50.8 (33)	36.9 (24)	
Can drink 100% juice no more than once a day						
Low	3.1 (3)	8.2 (8)	.3766	3.0 (2)	6.1 (4)	.1316
Moderate	26.5 (26)	22.4 (22)		24.2 (16)	31.8 (21)	
High	70.4 (69)	69.4 (68)		72.7 (48)	62.1 (41)	
Can drink regular soda or pop, sweetened fruit drinks, sports or energy drinks no more than once a month						
Low	19.6 (19)	20.6 (20)	.6676	23.4 (15)	23.4 (15)	.9751
Moderate	28.9 (28)	30.9 (30)		31.3 (20)	31.3 (20)	
High	51.5 (50)	48.5 (47)		45.3 (29)	45.3 (29)	
Number of respondents (range) ^b			97–99			63–66

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

* Indicates statistical significance if the p-value is ≤ .05.

** Indicates statistical significance if the p-value is ≤ .01.

^a The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure). The distributions of responses are provided for the initial and interim time periods and the results of the Wilcoxon test for the within-person change over time between initial and interim, followed by the results for the initial versus final time period. The number of respondents for each comparison is the number of respondents who provided data at follow-up (interim or final).

^b A range is provided because the number of respondents varied by question.

Exhibit K-13. Outcome Analysis for Food Acquisition and Management Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1e)

Measure ^a	Initial % (n)	Interim % (n)	Change ^b	McNemar's Test (<i>p</i> -value)	Initial % (n)	Final % (n)	Change ^c	McNemar's Test (<i>p</i> -value)
Plan meals ahead of time	58.0 (58)	60.0 (60)	2.0	.7237	57.4 (39)	58.8 (40)	1.5	.8273
Use Nutrition Facts on food labels to choose foods	29.0 (29)	27.0 (27)	-2.0	.7055	23.5 (16)	36.8 (25)	13.2 *	.0201
Number of respondents ^d			100				68	

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

* Indicates statistical significance if the *p*-value is ≤ .05.

^a Respondents answered on a 5-point response set: 1 = "almost never," 2 = "once in a while," 3 = "sometimes," 4 = "often," 5 = "almost always." Tabled values report the percentage of respondents who answered "often" or "almost always" at initial, interim, and final.

^b Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported "often" or "almost always" at interim.

^c Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported "often" or "almost always" at final.

^d A range is provided because the number of respondents varied by question.

Exhibit K-14. Outcome Analysis for Eating Behavior Measures (Times per Week) for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1e)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	<i>p</i> -value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	<i>p</i> -value for t-test
Days per week eat breakfast	5.8 (1.9)	5.8 (1.7)	0.0	.8768	5.5 (2.2)	5.2 (2.1)	-0.3	.2800
Times per week eat out ^c	1.7 (1.2)	1.4 (1.2)	-0.3	.0691	1.9 (1.2)	1.7 (1.6)	-0.2	.3457
Times per week eat fast food ^c	1.3 (1.2)	1.2 (1.1)	-0.1	.2368	1.4 (1.3)	1.3 (1.4)	-0.0	.8602
Number of respondents (range) ^d			94-99				64-66	

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c Response options ranged from "0" to "8 or more"; "8 or more" was assigned a value of 8 to calculate a mean.

^d A range is provided because the number of respondents varied by question.

Exhibit K-15. Outcome Analysis for Eating Behavior Measures (Frequency) for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1e)

Measure	Interim % (n)	Change ^a	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change ^b	McNemar's Test (p-value)	Interim % (n)
Eat meal while watching TV ^c	21.0 (21)	28.0 (28)	7.0	0.1779	22.4 (15)	34.3 (23)	11.9 *	.0209
Cook homemade dinner ^d	69.7 (69)	73.7 (73)	4.0	0.4497	72.1 (49)	77.9 (53)	5.9	.2850
Number of respondents (range) ^e			99–100				67–68	

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

* Indicates statistical significance if the p-value is ≤ .05.

^a Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported the desired behavior at interim.

^b Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported the desired behavior at final.

^c Respondents answered on a 5-point response set: 1 = "rarely or never," 2 = "some days," 3 = "most days," 4 = "almost every day," and 5 = "every day." Tabled values report the percentage of respondents who answered "rarely or never" at initial and final.

^d Respondents answered on a 5-point response set: 1 = "rarely or never," 2 = "some days," 3 = "most days," 4 = "almost every day," and 5 = "every day." Tabled values report the percentage of respondents who answered "almost every day" or "every day" at initial and final.

^e A range is provided because the number of respondents varied by question.

Exhibit K-16. Outcome Analysis for Breastfeeding and Infant Feeding Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1b and RQ1e) ^a

Measure	Results
Self-efficacy ^b	
Self-efficacy for breastfeeding until infant is 6 months old	
Low (n, %)	8, 19.0
Moderate (n, %)	2, 4.8
High (n, %)	32, 76.2
Self-efficacy for breastfeeding until infant is 12 months old	
Low (n, %)	11, 28.2
Moderate (n, %)	8, 20.5
High (n, %)	20, 51.3
Self-efficacy for breastfeeding exclusivity	
Low (n, %)	20, 48.8
Moderate (n, %)	6, 14.6
High (n, %)	15, 36.6
Breastfeeding intentions (n, mean, SD)	
Intend to breastfeed until infant is at least 6 months old ^c	38, 2.7, 1.3
Intend to breastfeed until infant is at least 12 months old ^d	64, 2.0, 1.2
Intend to breastfeed exclusively until infant is 12 months old ^d	63, 1.9, 1.2
Breastfeeding duration (actual duration, as reported by participant ^e)	
Never breastfed infant	8, 12.3
Initiated breastfeeding, but stopped breastfeeding before infant was 6 months old	29, 44.6
Initiated breastfeeding and breastfed infant until at least 6 months old	28, 43.1
When infant age up to 6 months is fed (n, %) ^f	
On a regular schedule	14, 20.6
When baby cries or seems hungry	12, 17.6
Answered both of the above	42, 61.8
When solid food was first introduced (n, %) ^g	
Less than 3 months	1, 1.9
4 months	25, 46.3
5 months	12, 22.2
6 months or older	16, 29.6
First solid food fed to infant (n, %) ^h	
Baby cereal	25, 50.0
Vegetables	15, 30.0
Fruit	7, 14.0
Meat	0, 0.0
Other	3, 6.0

(continued)

Exhibit K-16. Outcome Analysis for Breastfeeding and Infant Feeding Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1b and RQ1e) ^a (continued)

Measure	Results
Prior Breastfeeding Experience (n, %)	
No, first pregnancy	58, 40.8
No	29, 20.4
Yes	55, 38.7
Nonrespondents	12
Number of respondents (range) ⁱ	38–68

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

^a Breastfeeding measures were measured at the final period, instead of each reporting period of initial, interim, and final because for some measures (e.g., duration), the value of the measure is determined by analyzing data across reporting periods. Also, for some measures (e.g., infant feeding), information was not collected during each reporting period because it was not applicable given the age of the child. Note that pregnant women answered the final postpartum survey at the final time period because they would have been postpartum at this time point.

^b Measured at final period. The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure). Respondents who were not breastfeeding were excluded from the analysis because they had already made the decision to not breastfeed.

^c Measured at final period. Excludes participants who enrolled in their third trimester because infant would be older than 6 months at final period (n = 29). See Appendix J for a description of how outcome variable was derived using responses to Q9a in final postpartum survey. Index is on a 1–4 response set, with 1 = "not thinking about doing the behavior," 2 = "thinking about doing it," 3 = "planning on doing it," and 4 = "already doing the behavior."

^d Measured at final period. See Appendix J for a description of how outcome variable was derived using responses to Q9b (intend to breastfeed) and Q9c (intend to breastfeed exclusively) in final postpartum survey. Index for each outcome is on a 1–4 response set, with 1 = "not thinking about doing the behavior," 2 = "thinking about doing it," 3 = "planning on doing it," and 4 = "already doing the behavior."

^e Measured at final period. See Appendix J for a description of how the outcome variable was derived using responses to Q19 in final postpartum survey. Respondents were assigned to one of the three categories shown in table based on their response.

^f For participants who enrolled in their first or second trimester, measured at final period using responses to Q17 in final postpartum survey. For participants who enrolled in their third trimester, measured at the interim period so that the infant would be less than 6 months old. Respondents who answered "I am not feeding my baby breastmilk or formula" were excluded from percentage calculation (n = 2).

^g Measured at final period using responses to Q20 in final postpartum survey. Respondents who answered "has not eaten solid foods" were excluded from percentage calculation (n = 14).

^h Measured at final period using responses to Q21 in final postpartum survey. Respondents who answered "has not eaten solid foods" to Q20 were excluded from percentage calculation (n = 14).

ⁱ A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-17. Outcome Analysis for Dietary Intake Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1c)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Fiber (g/day)	15.9 (3.6)	14.7 (2.3)	-1.3 ***	.0004	16.1 (3.8)	14.9 (2.7)	-1.3 *	.0187
Added sugar (tsp/day)	14.7 (4.2)	14.7 (3.9)	0.0	.9893	15.5 (4.9)	15.5 (4.4)	0.0	.9337
Added sugar from sugary beverages (tsp/day)	6.6 (3.3)	6.8 (3.4)	0.2	.5492	6.8 (3.2)	7.7 (4.0)	0.9 *	.0430
Whole grains (oz/day)	0.9 (0.5)	0.7 (0.3)	-0.2 **	.0018	0.9 (0.5)	0.7 (0.3)	-0.1	.0631
Dairy (cup/day)	1.9 (0.5)	1.8 (0.5)	-0.1	.2741	1.8 (0.5)	1.6 (0.5)	-0.2 **	.0018
Fruit and vegetables, including legumes (cup/day)	2.8 (0.8)	2.6 (0.7)	-0.2 *	.0230	2.7 (0.9)	2.5 (0.6)	-0.2	.0631
Fruit and vegetables including legumes but excluding fried potatoes (cup/day)	2.7 (0.8)	2.5 (0.7)	-0.2 *	.0145	2.7 (0.9)	2.5 (0.7)	-0.2	.0942
Number of respondents (range) ^c			84–100				52–66	

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

Notes: Dietary intake measures estimated using NHANES Screener instrument.

* Indicates statistical significance if the p-value is ≤ .05.

** Indicates statistical significance if the p-value is ≤ .01.

*** Indicates statistical significance if the p-value is ≤ .001.

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c A range is provided because the number of respondents varied by question.

Exhibit K-18. Outcome Analysis for Physical Activity Measures for Women Who Were Pregnant at Enrollment: Pilot Study (RQ1d)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Number of minutes of moderate or vigorous physical activity per week (minutes/week) ^c	151.1 (118.2)	148.0 (121.7)	-3.1	.8563	160.3 (119.0)	177.3 (129.8)	16.9	.4434
Number of hours watch TV or DVDs daily ^d	3.1 (2.0)	3.3 (2.3)	0.2	.3606	3.1 (2.0)	3.1 (2.2)	0.0	.9457
Number of respondents (range) ^e			66–95				44–65	

Source: Participant Surveys, Initial, Interim, and Final (timing of data collection varied depending on the participant's trimester at enrollment)

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c See Appendix J for a description of how the outcome variable was derived using responses to questions on number of days of physical activity and minutes per day.

^d Response options ranged from "0" to "8 or more"; "8 or more" was assigned a value of 8 to calculate a mean.

^e A range is provided because the number of respondents varied by question.

Exhibit K-19. Outcome Analysis for Readiness to Change Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1a)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to eat vegetables at dinner every day						
Not thinking about doing it	4.7 (5)	0.0 (0)	.3471	3.5 (3)	3.5 (3)	.5093
Thinking about doing it	9.3 (10)	17.8 (19)		9.4 (8)	11.8 (10)	
Planning on doing it next month	6.5 (7)	9.3 (10)		5.9 (5)	4.7 (4)	
Have been doing it for less than 6 months	13.1 (14)	12.1 (13)		14.1 (12)	16.5 (14)	
Have been doing it for 6 months or longer	66.4 (71)	60.7 (65)		67.1 (57)	63.5 (54)	
Readiness to eat fruit for snack instead of cookies or chips every day						
Not thinking about doing it	2.8 (3)	4.6 (5)	.4715	1.2 (1)	1.2 (1)	.4157
Thinking about doing it	13.8 (15)	16.5 (18)		12.9 (11)	9.4 (8)	
Planning on doing it next month	16.5 (18)	11.9 (13)		14.1 (12)	16.5 (14)	
Have been doing it for less than 6 months	22.9 (25)	24.8 (27)		28.2 (24)	23.5 (20)	
Have been doing it for 6 months or longer	44.0 (48)	42.2 (46)		43.5 (37)	49.4 (42)	
Readiness to drink low-fat (1%) or fat-free/skim milk instead of whole milk or 2% (reduced fat) milk every day						
Not thinking about doing it	24.1 (26)	28.7 (31)	.9569	20.2 (17)	29.8 (25)	.1861
Thinking about doing it	15.7 (17)	11.1 (12)		11.9 (10)	9.5 (8)	
Planning on doing it next month	4.6 (5)	1.9 (2)		4.8 (4)	2.4 (2)	
Have been doing it for less than 6 months	9.3 (10)	13.0 (14)		13.1 (11)	16.7 (14)	
Have been doing it for 6 months or longer	46.3 (50)	45.4 (49)		50.0 (42)	41.7 (35)	

(continued)

Exhibit K-19. Outcome Analysis for Readiness to Change Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1a) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to almost always eat whole grain bread instead of white						
Not thinking about doing it	9.8 (10)	12.7 (13)	.7421	7.1 (6)	11.8 (10)	.5694
Thinking about doing it	18.6 (19)	15.7 (16)		12.9 (11)	11.8 (10)	
Planning on doing it next month	8.8 (9)	8.8 (9)		10.6 (9)	9.4 (8)	
Have been doing it for less than 6 months	18.6 (19)	20.6 (21)		22.4 (19)	20.0 (17)	
Have been doing it for 6 months or longer	44.1 (45)	42.2 (43)		47.1 (40)	47.1 (40)	
Readiness to almost always eat brown rice instead of white						
Not thinking about doing it	27.5 (28)	32.4 (33)	.9557	22.9 (19)	32.5 (27)	.8494
Thinking about doing it	27.5 (28)	21.6 (22)		31.3 (26)	21.7 (18)	
Planning on doing it next month	11.8 (12)	13.7 (14)		13.3 (11)	12.0 (10)	
Have been doing it for less than 6 months	14.7 (15)	9.8 (10)		13.3 (11)	12.0 (10)	
Have been doing it for 6 months or longer	18.6 (19)	22.5 (23)		19.3 (16)	21.7 (18)	
Readiness to almost always eat whole wheat or corn tortillas instead of white flour tortillas						
Not thinking about doing it	18.5 (20)	23.1 (25)	.4145	15.9 (13)	18.3 (15)	.4463
Thinking about doing it	24.1 (26)	24.1 (26)		22.0 (18)	25.6 (21)	
Planning on doing it next month	11.1 (12)	9.3 (10)		12.2 (10)	11.0 (9)	
Have been doing it for less than 6 months	15.7 (17)	13.9 (15)		18.3 (15)	14.6 (12)	
Have been doing it for 6 months or longer	30.6 (33)	29.6 (32)		31.7 (26)	30.5 (25)	

(continued)

Exhibit K-19. Outcome Analysis for Readiness to Change Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1a) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to drink 100% juice no more than once a day						
Not thinking about doing it	7.6 (8)	6.7 (7)	.2139	8.5 (7)	8.5 (7)	.6985
Thinking about doing it	16.2 (17)	15.2 (16)		11.0 (9)	12.2 (10)	
Planning on doing it next month	15.2 (16)	8.6 (9)		17.1 (14)	14.6 (12)	
Have been doing it for less than 6 months	26.7 (28)	26.7 (28)		22.0 (18)	14.6 (12)	
Have been doing it for 6 months or longer	34.3 (36)	42.9 (45)		41.5 (34)	50.0 (41)	
Readiness to a drink regular soda or pop, sweetened fruit drinks, sports or energy drinks no more than once a month						
Not thinking about doing it	26.9 (29)	25.0 (27)	.5704	26.2 (22)	31.0 (26)	.3012
Thinking about doing it	26.9 (29)	28.7 (31)		23.8 (20)	19.0 (16)	
Planning on doing it next month	9.3 (10)	14.8 (16)		9.5 (8)	16.7 (14)	
Have been doing it for less than 6 months	11.1 (12)	10.2 (11)		7.1 (6)	9.5 (8)	
Have been doing it for 6 months or longer	25.9 (28)	21.3 (23)		33.3 (28)	23.8 (20)	
Number of respondents (range) ^b			102–109			82–85

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Response categories can be mapped to the stages of change: not thinking about doing it = precontemplation, thinking about doing it = contemplation, planning on doing it next month = planning, have been doing it for less than 6 months = action, and have been doing it for 6 months or longer = maintenance. The distributions of responses are provided for the initial and interim time periods and the results of the Wilcoxon test for the within-person change over time between initial and interim, followed by the results for the initial versus final time period. The number of respondents for each comparison is the number of respondents who provided data at follow-up (interim or final).

^b A range is provided because the number of respondents varied by question.

Exhibit K-20. Outcome Analysis for Enjoyment of Food Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1a)

Measure^a	Initial % (n)	Interim % (n)	Change^b	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change^c	McNemar's Test (p-value)
Like fruit	100.0 (108)	100.0 (108)	0.0	—	100.0 (88)	100.0 (88)	0.0	—
Like vegetables	98.2 (107)	100.0 (109)	1.8	—	97.8 (87)	98.9 (88)	1.1	.3173
Like low-fat (1%) or fat-free/skim milk	73.1 (79)	73.1 (79)	0.0	1.0000	73.9 (65)	68.2 (60)	-5.7	.2253
Like whole grains	92.7 (101)	90.8 (99)	-1.8	.5271	95.5 (85)	92.1 (82)	-3.4	.1797
Number of respondents (range) ^d			108–109				88–89	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Response categories were 1 = "never tried," 2 = "don't like at all," 3 = "like a little," 4 = "like a lot." Tabled values report the percentage of respondents who answered "like a little" or "like a lot" at initial, interim, and final.

^b Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported they like the food "a little" or "a lot" at interim.

^c Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported they like the food "a little" or "a lot" at final.

^d A range is provided because the number of respondents varied by question.

— = p-value could not be calculated because one or more of the estimates was equal to zero.

Exhibit K-21. Outcome Analysis for Self-Efficacy for Eating Behavior Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1a)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Can eat vegetables at dinner every day						
Low	3.6 (4)	5.5 (6)	.0710	2.3 (2)	1.2 (1)	1.0000
Moderate	20.0 (22)	26.4 (29)		22.1 (19)	23.3 (20)	
High	76.4 (84)	68.2 (75)		75.6 (65)	75.6 (65)	
Can eat fruit for snack instead of cookies or chips every day						
Low	2.8 (3)	3.7 (4)	.8840	2.3 (2)	3.5 (3)	.2319
Moderate	32.1 (35)	29.4 (32)		30.2 (26)	19.8 (17)	
High	65.1 (71)	67.0 (73)		67.4 (58)	76.7 (66)	
Can drink low-fat (1%) or fat-free/skim milk instead of whole milk or 2% (reduced fat) milk every day						
Low	28.2 (31)	28.2 (31)	.5276	23.3 (20)	29.1 (25)	.0628
Moderate	11.8 (13)	17.3 (19)		12.8 (11)	19.8 (17)	
High	60.0 (66)	54.5 (60)		64.0 (55)	51.2 (44)	
Can almost always eat whole grain bread instead of white						
Low	14.8 (16)	21.3 (23)	.3689	11.9 (10)	11.9 (10)	1.0000
Moderate	26.9 (29)	20.4 (22)		27.4 (23)	28.6 (24)	
High	58.3 (63)	58.3 (63)		60.7 (51)	59.5 (50)	
Can almost always eat brown rice instead of white						
Low	31.1 (33)	30.2 (32)	.5726	26.2 (22)	27.4 (23)	.9637
Moderate	33.0 (35)	30.2 (32)		35.7 (30)	33.3 (28)	
High	35.8 (38)	39.6 (42)		38.1 (32)	39.3 (33)	

(continued)

Exhibit K-21. Outcome Analysis for Self-Efficacy for Eating Behavior Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1a) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Can almost always eat whole wheat or corn tortillas instead of white						
Low	15.9 (17)	27.1 (29)	.0189 *	9.9 (8)	19.8 (16)	.1742
Moderate	37.4 (40)	33.6 (36)		39.5 (32)	32.1 (26)	
High	46.7 (50)	39.3 (42)		50.6 (41)	48.1 (39)	
Can drink 100% juice no more than once a day						
Low	1.9 (2)	7.4 (8)	.0943	2.4 (2)	9.8 (8)	.0986
Moderate	26.9 (29)	26.9 (29)		25.6 (21)	25.6 (21)	
High	71.3 (77)	65.7 (71)		72.0 (59)	64.6 (53)	
Can drink regular soda or pop, sweetened fruit drinks, sports or energy drinks no more than once a month						
Low	23.1 (25)	33.3 (36)	.7454	17.6 (15)	24.7 (21)	.4544
Moderate	38.0 (41)	21.3 (23)		36.5 (31)	29.4 (25)	
High	38.9 (42)	45.4 (49)		45.9 (39)	45.9 (39)	
Number of respondents (range) ^b			106–110		81–86	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .05.

^a The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure). The distributions of responses are provided for the initial and interim time periods and the results of the Wilcoxon test for the within-person change over time between initial and interim, followed by the results for the initial versus final time period. The number of respondents for each comparison is the number of respondents who provided data at follow-up (interim or final).

^b A range is provided because the number of respondents varied by question.

Exhibit K-22. Outcome Analysis for Food Acquisition and Management Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1e)

Measure ^a	Initial % (n)	Interim % (n)	Change ^b	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change ^c	McNemar's Test (p-value)
Plan meals ahead of time ^c	62.4 (68)	54.1 (59)	-8.3	.0833	60.2 (53)	59.1 (52)	-1.1	.8575
Use Nutrition Facts on food labels to choose foods ^c	33.3 (35)	36.2 (38)	2.9	.5316	35.2 (31)	42.0 (37)	6.8	.2008
Number of respondents (range) ^d			105-109				88	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Respondents answered on a 5-point response set: 1 = "almost never," 2 = "once in a while," 3 = "sometimes," 4 = "often," 5 = "almost always." Tabled values report the percentage of respondents who answered "often" or "almost always" at initial, interim, and final.

^b Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported "often" or "almost always" at interim.

^c Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported "often" or "almost always" at final.

^d A range is provided because the number of respondents varied by question.

Exhibit K-23. Outcome Analysis for Eating Behavior Measures (Times per Week) for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1e)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Days per week eat breakfast	4.9 (2.1)	4.8 (2.1)	-0.1	.7338	5.1 (2.1)	4.7 (2.0)	-0.4	.1557
Times per week eat out ^c	1.5 (1.3)	1.4 (1.6)	-0.1	.5709	1.5 (1.2)	1.6 (1.7)	0.1	.4411
Times per week eat fast food ^c	1.3 (1.3)	1.2 (1.5)	-0.1	.3712	1.3 (1.4)	1.5 (1.7)	0.2	.3245
Number of respondents (range) ^d				100–106			83–85	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c Response options ranged from "0" to "8 or more"; "8 or more" was assigned a value of 8 to calculate a mean.

^d A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-24. Outcome Analysis for Eating Behavior Measures (Frequency) for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1e)

Measure	Initial % (n)	Interim % (n)	Change ^a	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change ^b	McNemar's Test (p-value)
Eat meal while watching TV ^c	21.0 (22)	21.9 (23)	1.0	0.8273	23.9 (21)	33.0 (29)	9.1	.1025
Cook homemade dinner ^d	67.0 (69)	69.9 (72)	2.9	0.4913	71.4 (60)	78.6 (66)	7.1	.1573
Number of respondents (range) ^e			103–105				84–88	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported the desired behavior at interim.

^b Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported the desired behavior at final.

^c Respondents answered on a 5-point response set: 1 = "rarely or never," 2 = "some days," 3 = "most days," 4 = "almost every day," and 5 = "every day." Tabled values report the percentage of respondents who answered "rarely or never" at initial and final.

^d Respondents answered on a 5-point response set: 1 = "rarely or never," 2 = "some days," 3 = "most days," 4 = "almost every day," and 5 = "every day." Tabled values report the percentage of respondents who answered "almost every day" or "every day" at initial and final.

^e A range is provided because the number of respondents varied by question.

Exhibit K-25. Outcome Analysis for Breastfeeding and Infant Feeding Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1b and RQ1e) ^a

Measure	Results
Self-efficacy for breastfeeding until infant is 12 months old ^b	
Low (n, %)	18, 38.3
Moderate (n, %)	6, 12.8
High (n, %)	23, 48.9
Self-efficacy for breastfeeding exclusivity ^b	
Low (n, %)	23, 53.5
Moderate (n, %)	5, 11.6
High (n, %)	15, 34.9
Breastfeeding intentions	
Intend to breastfeed until infant is at least 12 months old (n, mean, SD) ^c	104, 1.8, 1.2
Intend to breastfeed exclusively until infant is 12 months old (n, mean, SD) ^c	106, 1.7, 1.1
Breastfeeding duration (actual duration, as reported by participant) (n, %) ^d	
Never breastfed infant	18, 20.9
Initiated breastfeeding, but did not breastfeed infant until at least 6 months old	22, 25.6
Initiated breastfeeding and breastfed infant until at least 6 months old	46, 53.5
When infant age up to 6 months is fed (n, %) ^e	
On a regular schedule	49, 27.7
When baby cries or seems hungry	41, 23.2
Answered both of the above	87, 49.2
When solid food was first introduced (n, %) ^f	
Less than 3 months	3, 3.5
4 months	22, 25.6
5 months	14, 16.3
6 months or older	47, 54.7
First solid food fed to infant (n, %) ^g	
Baby cereal	49, 65.3
Vegetables	16, 21.3
Fruit	7, 9.3
Meat	1, 1.3
Other	2, 2.7

(continued)

Exhibit K-25. Outcome Analysis for Breastfeeding and Infant Feeding Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1b and RQ1e) ^a (continued)

Measure	Results
Prior breastfeeding experience (n, %)	
No, first pregnancy	50, 27.8
No	50, 27.8
Yes	80, 44.4
Nonrespondents	2
Number of respondents (range) ^h	43–177

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Breastfeeding measures were measured at interim or final, instead of each reporting period of initial, interim, and final because for some measures (e.g., duration), the value of the measure is determined by analyzing data across reporting periods. Also, for some measures (e.g., infant feeding), information was not collected during each reporting period because it was not applicable given the age of the child.

^b Measured at interim period to assess efficacy before infant is 12 months old. The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure). Respondents who were not breastfeeding were excluded from the analysis because they have already made the decision to not breastfeed.

^c Measured at interim period to assess intentions before infant is 12 months old. See Appendix J for a description of how outcome variable was derived using responses to Q9b (intend to breastfeed) and Q9c (intend to exclusively breastfeed) in interim postpartum survey. Index for each outcome is on a 1–4 response set, with 1 = “not thinking about doing the behavior,” 2 = “thinking about doing it,” 3 = “planning on doing it,” and 4 = “already doing the behavior.”

^d Measured at final period to assess duration. See Appendix J for a description of how the outcome variable was derived using responses to Q19 in final postpartum survey. Respondents were assigned to one of the three categories shown in table based on their response.

^e Measured at initial period to assess behavior before infant is 6 months old using responses to Q15 in initial postpartum survey. Respondents who answered “I am not feeding my baby breastmilk or formula” were excluded from percentage calculation (n = 5).

^f Measured at final period using responses to Q20 in final postpartum survey. Respondents who answered “has not eaten solid foods” were excluded from percentage calculation (n = 2).

^g Measured at final period using responses to Q21 in final postpartum survey. Respondents who answered “has not eaten solid foods” to Q20 were excluded from percentage calculation (n = 2).

^h A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-26. Outcome Analysis for Dietary Intake Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1c)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	<i>p</i> -value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	<i>p</i> -value for t-test
Fiber (g/day)	15.1 (3.1)	14.6 (2.6)	-0.5	.0932	15.7 (3.1)	15.8 (3.1)	0.1	.8443
Added sugar (tsp/day)	16.4 (6.1)	16.2 (5.2)	-0.2	.7524	16.0 (4.9)	15.4 (5.6)	-0.5	.4556
Added sugar from sugary beverages (tsp/day)	8.0 (4.8)	8.3 (4.6)	0.3	.5222	7.4 (3.8)	7.6 (4.3)	0.2	.6096
Whole grains (oz/day)	0.8 (0.4)	0.7 (0.3)	-0.1	.0730	0.8 (0.4)	0.8 (0.4)	0.0	.4127
Dairy (cup/day)	1.9 (0.7)	1.7 (0.6)	-0.2 **	.0066	1.9 (0.6)	1.7 (0.6)	-0.2 *	.0107
Fruit and vegetables, including legumes (cup/day)	2.5 (0.7)	2.5 (0.6)	-0.1	.3921	2.6 (0.7)	2.7 (0.7)	0.1	.2004
Fruit and vegetables including legumes but excluding fried potatoes (cup/day)	2.4 (0.7)	2.4 (0.7)	0.0	.5412	2.5 (0.7)	2.6 (0.7)	0.1	.2135
Number of respondents (range) ^c			87–106				65–82	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

Notes: Dietary intake measures estimated using NHANES Screener instrument.

* Indicates statistical significance if the *p*-value is ≤ .05.

** Indicates statistical significance if the *p*-value is ≤ .01.

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c A range is provided because the number of respondents varied by question.

Exhibit K-27. Outcome Analysis for Physical Activity Measures for Women Who Were Postpartum at Enrollment: Pilot Study (RQ1d)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Number of minutes of moderate or vigorous physical activity per week (minutes/week) ^c	116.4 (102.5)	125.2 (114.9)	8.8	.5290	111.1 (97.6)	160.8 (116.7)	49.8 ***	.0010
Number of hours watch TV or DVDs daily ^d	3.0 (1.9)	3.0 (1.8)	0.0	1.0000	3.0 (1.8)	2.7 (1.7)	-0.4 *	.0328
Number of respondents (range) ^e			66–107				61–87	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the *p*-value is ≤ .05.

*** Indicates statistical significance if the *p*-value is ≤ .001.

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c See Appendix J for a description of how the outcome variable was derived using responses to questions on number of days of physical activity and minutes per day.

^d Response options ranged from "0" to "8 or more"; "8 or more" was assigned a value of 8 to calculate a mean.

^e A range is provided because the number of respondents varied by question.

Exhibit K-28. Outcome Analysis for Readiness to Change Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1b)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to serve child vegetables (include baby food) at dinner every day						
Not thinking about doing it	2.4 (6)	4.1 (10)	.4646	0.9 (2)	1.9 (4)	.3554
Thinking about doing it	3.3 (8)	3.3 (8)		3.7 (8)	3.7 (8)	
Planning on doing it next month	2.8 (7)	3.7 (9)		2.8 (6)	4.7 (10)	
Have been doing it for less than 6 months	11.0 (27)	9.8 (24)		10.3 (22)	8.9 (19)	
Have been doing it for 6 months or longer	80.5 (198)	79.3 (195)		82.2 (176)	80.8 (173)	
Readiness to serve child fruit (include baby food) for a snack instead of cookies or chips every day						
Not thinking about doing it	1.6 (4)	2.4 (6)	.4238	1.9 (4)	1.4 (3)	.9311
Thinking about doing it	4.1 (10)	4.1 (10)		4.3 (9)	5.2 (11)	
Planning on doing it next month	2.0 (5)	2.8 (7)		2.8 (6)	2.8 (6)	
Have been doing it for less than 6 months	12.2 (30)	12.6 (31)		10.9 (23)	10.4 (22)	
Have been doing it for 6 months or longer	80.1 (197)	78.0 (192)		80.1 (169)	80.1 (169)	
Readiness to serve child low-fat (1%) or fat-free/skim milk instead of whole milk or 2% (reduced fat) milk every day ^b						
Not thinking about doing it	14.0 (21)	18.7 (28)	.7600	14.1 (18)	16.4 (21)	.6339
Thinking about doing it	6.0 (9)	3.3 (5)		7.0 (9)	2.3 (3)	
Planning on doing it next month	5.3 (8)	2.7 (4)		3.9 (5)	4.7 (6)	
Have been doing it for less than 6 months	15.3 (23)	6.0 (9)		11.7 (15)	8.6 (11)	
Have been doing it for 6 months or longer	59.3 (89)	69.3 (104)		63.3 (81)	68.0 (87)	

(continued)

**Exhibit K-28. Outcome Analysis for Readiness to Change Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1b)
(continued)**

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to almost always serve child whole grain bread instead of white bread						
Not thinking about doing it	5.7 (14)	6.5 (16)	.7218	5.1 (11)	6.0 (13)	.8578
Thinking about doing it	9.3 (23)	8.1 (20)		8.8 (19)	9.3 (20)	
Planning on doing it next month	4.0 (10)	5.3 (13)		4.2 (9)	3.3 (7)	
Have been doing it for less than 6 months	16.6 (41)	12.6 (31)		12.6 (27)	12.1 (26)	
Have been doing it for 6 months or longer	64.4 (159)	67.6 (167)		69.3 (149)	69.3 (149)	
Readiness to almost always serve child brown rice instead of white rice						
Not thinking about doing it	20.1 (48)	25.1 (60)	.1313	19.3 (41)	20.8 (44)	.4846
Thinking about doing it	21.8 (52)	18.4 (44)		20.3 (43)	18.9 (40)	
Planning on doing it next month	3.8 (9)	10.5 (25)		3.8 (8)	9.9 (21)	
Have been doing it for less than 6 months	21.3 (51)	13.4 (32)		18.9 (40)	13.2 (28)	
Have been doing it for 6 months or longer	33.1 (79)	32.6 (78)		37.7 (80)	37.3 (79)	
Readiness to almost always serve child whole wheat or corn tortillas instead of white flour tortillas						
Not thinking about doing it	21.7 (52)	24.2 (58)	.3619	20.1 (42)	20.1 (42)	.6785
Thinking about doing it	14.6 (35)	15.0 (36)		13.4 (28)	14.4 (30)	
Planning on doing it next month	5.4 (13)	6.7 (16)		4.8 (10)	9.1 (19)	
Have been doing it for less than 6 months	17.5 (42)	15.0 (36)		16.7 (35)	10.0 (21)	
Have been doing it for 6 months or longer	40.8 (98)	39.2 (94)		45.0 (94)	46.4 (97)	

(continued)

Exhibit K-28. Outcome Analysis for Readiness to Change Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1b)
(continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Readiness to serve child 100% juice no more than once a day						
Not thinking about doing it	7.3 (18)	8.6 (21)	.8145	7.0 (15)	8.5 (18)	.4188
Thinking about doing it	9.8 (24)	9.8 (24)		8.9 (19)	5.6 (12)	
Planning on doing it next month	6.5 (16)	5.7 (14)		6.6 (14)	6.1 (13)	
Have been doing it for less than 6 months	20.0 (49)	13.5 (33)		18.8 (40)	13.6 (29)	
Have been doing it for 6 months or longer	56.3 (138)	62.4 (153)		58.7 (125)	66.2 (141)	
Readiness to serve child regular soda or pop, sweetened fruit drinks, sports drinks or energy drinks no more than once a month						
Not thinking about doing it	51.0 (126)	45.7 (113)	.0406 *	49.8 (107)	37.2 (80)	.0149 *
Thinking about doing it	6.1 (15)	6.5 (16)		4.7 (10)	9.8 (21)	
Planning on doing it next month	6.1 (15)	3.6 (9)		5.1 (11)	7.4 (16)	
Have been doing it for less than 6 months	9.7 (24)	9.3 (23)		10.2 (22)	7.9 (17)	
Have been doing it for 6 months or longer	27.1 (67)	34.8 (86)		30.2 (65)	37.7 (81)	
Number of respondents (range) ^c			150–247			128–215

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .05.

^a Response categories can be mapped to the stages of change: not thinking about doing it = precontemplation, thinking about doing it = contemplation, planning on doing it next month = planning, have been doing it for less than 6 months = action, and have been doing it for 6 months or longer = maintenance. The distributions of responses are provided for the initial and interim time periods and the results of the Wilcoxon test for the within-person change over time between initial and interim, followed by the results for the initial versus final time period. The number of respondents for each comparison is the number of respondents who provided data at follow-up (interim or final).

^b Participants with a target child less than 2 years old (n = 276) did not answer this question because the current dietary recommendation suggests children less than 12 months old should not drink cow's milk and children 1 to 2 years old should drink whole milk unless otherwise recommended by their health care provider.

^c A range is provided because the number of respondents varied by question.

Exhibit K-29. Outcome Analysis for Child Enjoyment of Food Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1b)

Measure ^a	Initial % (n)	Interim % (n)	Change ^b	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change ^c	McNemar's Test (p-value)
Child likes vegetables	99.2 (250)	99.2 (250)	0.0	1.0000	99.1 (221)	99.6 (222)	0.4	.3173
Child likes fruit	96.0 (240)	95.6 (239)	-0.4	.7963	95.5 (211)	94.1 (208)	-1.4	.4386
Child likes low-fat (1%) or fat-free/skim milk ^d	84.3 (129)	83.7 (128)	-0.7	.8348	84.4 (114)	81.5 (110)	-3.0	.4142
Child likes whole grains	90.2 (229)	87.8 (223)	-2.4	.3428	92.0 (207)	91.6 (206)	-0.4	.8618
Number of respondents (range) ^e			153–254				135–225	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

^a Response categories were 1 = never tried, 2 = don't like at all, 3 = like a little, 4 = like a lot. Tabled values report the percentage of respondents who answered "like a little" or "like a lot" at initial, interim, and final.

^b Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported they like the food "a little" or "a lot" at interim.

^c Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported they like the food "a little" or "a lot" at final.

^d Participants with a target child less than 2 years old (n = 156) were instructed to skip this question because the current dietary recommendation suggests children less than 12 months old should not drink cow's milk and children 1 to 2 years old should drink whole milk unless otherwise recommended by their health care provider.

^e A range is provided because the number of respondents varied by question.

Exhibit K-30. Outcome Analysis for Self-Efficacy for Feeding Behavior Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1b)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Can serve child vegetables (include baby food) at dinner every day						
Low	3.2 (8)	1.2 (3)	.1229	3.7 (8)	2.3 (5)	.0396 *
Moderate	8.0 (20)	16.5 (41)		6.9 (15)	16.6 (36)	
High	88.8 (221)	82.3 (205)		89.4 (194)	81.1 (176)	
Can serve child fruit (include baby food) for a snack instead of cookies or chips every day						
Low	1.6 (4)	2.0 (5)	.0005 ***	2.3 (5)	1.4 (3)	.1085
Moderate	6.0 (15)	15.2 (38)		6.9 (15)	14.2 (31)	
High	92.4 (231)	82.8 (207)		90.8 (198)	84.4 (184)	
Can serve child low-fat (1%) or fat-free/skim milk instead of whole milk or 2% (reduced fat) milk every day ^b						
Low	6.1 (9)	16.9 (25)	.0145 *	7.8 (10)	17.1 (22)	.0364 *
Moderate	14.2 (21)	8.1 (12)		14.0 (18)	9.3 (12)	
High	79.7 (118)	75.0 (111)		78.3 (101)	73.6 (95)	
Can serve child whole grain bread instead of white bread						
Low	4.5 (11)	5.3 (13)	.0206 *	4.7 (10)	7.4 (16)	.0193 *
Moderate	11.5 (28)	19.3 (47)		11.6 (25)	16.7 (36)	
High	84.0 (204)	75.3 (183)		83.7 (180)	75.8 (163)	
Can serve child brown rice instead of white rice						
Low	14.6 (35)	24.7 (59)	.0026 **	14.6 (31)	21.2 (45)	.1355
Moderate	29.7 (71)	26.8 (64)		28.8 (61)	24.5 (52)	
High	55.6 (133)	48.5 (116)		56.6 (120)	54.2 (115)	

(continued)

Exhibit K-30. Outcome Analysis for Self-Efficacy for Feeding Behavior Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1b) (continued)

Measure ^a	Initial % (n)	Interim % (n)	Wilcoxon Test (p-value)	Initial % (n)	Final % (n)	Wilcoxon Test (p-value)
Can serve child whole wheat or corn tortillas instead of white flour tortillas						
Low	12.4 (30)	19.8 (48)	.001 ***	13.1 (28)	18.8 (40)	.0273 *
Moderate	20.2 (49)	23.6 (57)		17.4 (37)	18.3 (39)	
High	67.4 (163)	56.6 (137)		69.5 (148)	62.9 (134)	
Can serve child 100% juice no more than once a day						
Low	4.9 (12)	6.1 (15)	.2624	6.5 (14)	2.8 (6)	.1428
Moderate	15.6 (38)	18.0 (44)		13.4 (29)	14.3 (31)	
High	79.5 (194)	75.8 (185)		80.2 (174)	82.9 (180)	
Can serve child regular soda or pop, sweetened fruit drinks, sports drinks or energy drinks no more than once a month						
Low	24.1 (57)	6.3 (15)	<.001 ***	24.2 (52)	2.8 (6)	<.001 ***
Moderate	14.3 (34)	18.1 (43)		13.0 (28)	14.9 (32)	
High	61.6 (146)	75.5 (179)		62.8 (135)	82.3 (177)	
Number of respondents (range) ^c			148–250			129–218

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .05.

** Indicates statistical significance if the p-value is ≤ .01.

*** Indicates statistical significance if the p-value is ≤ .001.

^a The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure). The distributions of responses are provided for the initial and interim time periods and the results of the Wilcoxon test for the within-person change over time between initial and interim, followed by the results for the initial versus final time period. The number of respondents for each comparison is the number of respondents who provided data at follow-up (interim or final).

^b Participants with a target child less than 2 years old (n = 56) did not answer this question because the current dietary recommendation suggests children less than 12 months old should not drink cow's milk and children 1 to 2 years old should drink whole milk unless otherwise recommended by their health care provider.

^c A range is provided because the number of respondents varied by question.

Exhibit K-31. Outcome Analysis for Food Acquisition and Management Measures for Caregivers with Eligible Child: Pilot Study (RQ1e)

Measure^a	Initial % (n)	Interim % (n)	Change^b	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change^c	McNemar's Test (p-value)
Plan meals ahead of time	63.3 (205)	59.6 (193)	-3.7	.2207	65.8 (185)	63.0 (177)	-2.8	.3524
Use Nutrition Facts on food labels to choose foods	46.5 (147)	36.1 (114)	-10.4 ***	.0011	48.4 (136)	39.9 (112)	-8.5 **	.0088
Number of respondents (range) ^d			316–324				281	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

** Indicates statistical significance if the p-value is ≤ .01.

*** Indicates statistical significance if the p-value is ≤ .001.

^a Respondents answered on a 5-point response set: 1 = "almost never," 2 = "once in a while," 3 = "sometimes," 4 = "often," 5 = "almost always." Tabled values report the percentage of respondents who answered "often" or "almost always" at initial, interim, and final.

^b Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported "often" or "almost always" at interim.

^c Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported "often" or "almost always" at final.

^d A range is provided because the number of respondents varied by question.

Exhibit K-32. Outcome Analysis for Child Eating Behavior Measures (Times per Week/Number of Times) for Caregiver with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1e)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Days per week child eats breakfast	6.5 (1.2)	6.5 (1.3)	0.0	.9685	6.6 (1.2)	6.6 (1.2)	0.0	.9585
Times per week household eats out ^c	1.1 (1.0)	1.1 (1.1)	0.1	.3946	1.0 (1.0)	1.2 (1.2)	0.1	.1177
Times per week child eats fast food ^c	1.0 (1.2)	1.0 (1.0)	0.0	1.0000	0.9 (1.2)	1.0 (1.1)	0.1	.2966
Number of times caregiver offers a new food before deciding the child does not like it ^d	4.9 (2.9)	5.4 (3.1)	0.5 *	.0144	5.2 (3.0)	5.6 (3.3)	0.4	.0651
Number of respondents (range) ^e	208–256				182–227			

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .01.

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c Response options ranged from “0” to “8 or more”; “8 or more” was assigned a value of 8 to calculate a mean.

^d Mean score was assigned using responses to categorical variable by assigning a value of 1 for “once,” 2 for “twice,” 4 for “3–5 times,” 5 for “6–10 times,” 11 for “more than 10 times.” Recommended behavior is to try serving new foods at least 5 times. Excludes the responses “My child likes everything” and “My child hasn’t tried new foods.”

^e A range is provided because the number of respondents varied by question.

SD = standard deviation

Exhibit K-33. Outcome Analysis for Child Eating Behavior Measures (Frequency) for Caregiver with Eligible Child More than 12 Months Old at Enrollment: Pilot Study (RQ1e)

Measure	Initial % (n)	Interim % (n)	Change ^a	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change ^b	McNemar's Test (p-value)
Child eats meal while watching TV/DVDs ^c	45.7 (117)	42.6 (109)	-3.1	.3248	46.3 (105)	41.4 (94)	-4.8	.1590
Caregiver sits and eats meal with child ^d	79.6 (203)	76.5 (195)	-3.1	.3017	81.0 (183)	77.4 (175)	-3.5	.2382
Caregiver cooks homemade dinner for child ^d	89.9 (142)	81.6 (129)	-8.2 *	.0236	90.5 (124)	83.2 (114)	-7.3	.0588
Number of respondents (range) ^e			158–256				137–227	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .05.

^a Within-person change over time between initial and interim. Analysis of change is based on the number of respondents who provided data at initial and interim and calculated as the change over time in the percentage of respondents who reported the desired behavior at interim.

^b Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported the desired behavior at final.

^c Respondents answered on a 5-point response set: 1 = "rarely or never," 2 = "some days," 3 = "most days," 4 = "almost every day," and 5 = "every day." Tabled values report the percentage of respondents who answered "rarely or never" at initial and final.

^d Respondents answered on a 5-point response set: 1 = "rarely or never," 2 = "some days," 3 = "most days," 4 = "almost every day," and 5 = "every day." Tabled values report the percentage of respondents who answered "almost every day" or "every day" at initial and final.

^e A range is provided because the number of respondents varied by question.

Exhibit K-34. Outcome Analysis for Child Feeding Behavior Measures for Caregivers with Eligible Child 12 Months or Older at Enrollment: Pilot Study (RQ1e)

Measure	Initial % (n)	Interim % (n)	Change	McNemar's Test (p-value)	Initial % (n)	Final % (n)	Change ^a	McNemar's Test (p-value)
<i>Behaviors to Encourage^b</i>								
Kept track of what child eats and drinks	—	—	—	—	52.7 (117)	45.0 (100)	-7.7 *	.0350
Talked to child to encourage him/her to eat or drink	—	—	—	—	60.3 (79)	69.5 (91)	9.2 *	.0455
<i>Behaviors to Discourage^c</i>								
Tried to get child to finish his/her food and drinks	—	—	—	—	12.3 (27)	15.9 (35)	3.6	.1573
Tried to get child to eat even if s/he does not seem hungry	—	—	—	—	49.3 (107)	48.8 (106)	-0.5	.9104
Carefully controlled how much child eats or drinks	—	—	—	—	31.8 (70)	32.3 (71)	0.5	.8997
Let child eat desserts/sweets to keep him/her happy	—	—	—	—	82.9 (184)	80.2 (178)	-2.7	.3763
Number of respondents (range) ^d							131–222	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .05.

^a Within-person change over time between initial and final. Analysis of change is based on the number of respondents who provided data at initial and final and calculated as the change over time in the percentage of respondents who reported the desired behavior at final.

^b Respondents answered for how often they did the behavior in the past 30 days using a 5-point response set: 1 = "almost never," 2 = "once in a while," 3 = "sometimes," 4 = "often," 5 = "almost always." Tabled values report the percentage of respondents who answered "often" or "almost always" at initial and final (i.e., the desired behavior).

^c Respondents answered for how often they did the behavior in the past 30 days using a 5-point response set: 1 = "almost never," 2 = "once in a while," 3 = "sometimes," 4 = "often," 5 = "almost always." Tabled values report the percentage of respondents who answered "almost never" or "once in a while" at initial and final (i.e., the desired behavior).

^d A range is provided because the number of respondents varied by question.

— = Data not collected at interim time period.

Exhibit K-35. Descriptive Information on Feeding Behaviors for Infants Up to 12 Months Old at Enrollment for Caregivers with Eligible Child: Pilot Study (RQ1b and RQ1e) ^a

Behaviors	N	%
Breastfeeding status		
Infant is being breastfed	32	26.9
Infant is <u>not</u> being breastfed	87	73.1
Nonrespondents	1	
If breastfeeding, expected age of child when mother plans to stop breastfeeding (mean months and SD) ^b	28	16.0, 6.7
If breastfeeding, mother's efficacy for breastfeeding until child is 1 year old ^c		
Low	4	12.5
Moderate	1	3.1
High	27	84.4
Age when solid food was first introduced		
Less than 3 months old	7	5.9
4 months old	20	16.9
5 months old	24	20.3
6 months or older	65	55.1
Has not eaten solid foods	2	1.7
Nonrespondents	2	
If eating solid food, child feeds him/herself ^d	82	73.2
Caregiver puts cereal in bottle almost never or once in a while	79	71.2
Number of respondents (range) ^e	32–119	

Source: Participant Survey (Initial, July 2015)

^a The descriptive information presented in this table was collected only in the initial survey for participants with a child less than 12 months old.

^b Participants (n = 87) did not answer this question if the child was less than 12 months old and not breastfeeding at the time of the initial survey. Reported as number of months. Maximum value was 36 months.

^c Participants (n = 87) did not answer this question if the child was less than 12 months old and not breastfeeding at the time of the initial survey. The question asked how sure the respondent was that she could breastfeed her child until the child was 1 year old. The response options were "not sure" (coded as low), "a little sure" (coded as moderate), or "very sure" (coded as high).

^d Participants (n = 2) did not answer this question if the child was less than 12 months old and had not started eating solid foods at the time of the initial survey. The number of nonrespondents = 6.

^e A range is provided because the number of respondents varied by question.

Exhibit K-36. Outcome Analysis for Child Dietary Intake Measures for Caregivers with Eligible Child 24 Months or Older at Enrollment: Pilot Study (RQ1c)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Fiber (g/day)	13.0 (2.0)	12.4 (1.9)	-0.6 **	.0030	13.1 (2.6)	12.7 (2.0)	-0.4	.1274
Added sugar (tsp/day)	12.8 (2.2)	12.5 (1.8)	-0.2	.1823	12.8 (2.4)	12.8 (2.2)	0.0	.8051
Added sugar from sugary beverages (tsp/day)	4.1 (0.9)	4.1 (0.9)	0.0	.9766	4.0 (0.8)	4.2 (1.0)	0.1 *	.0447
Whole grains (oz/day)	0.6 (0.2)	0.5 (0.2)	-0.1 **	.0031	0.6 (0.2)	0.5 (0.2)	-0.1 **	.0060
Dairy (cup/day)	2.4 (0.6)	2.1 (0.4)	-0.3 ***	<.0001	2.4 (0.6)	2.1 (0.4)	-0.3 ***	<.0001
Fruit and vegetables, including legumes (cup/day)	2.3 (0.5)	2.1 (0.4)	-0.2 ***	.0003	2.3 (0.6)	2.2 (0.5)	-0.1	.1156
Fruit and vegetables including legumes but excluding fried potatoes (cup/day)	2.2 (0.5)	2.0 (0.5)	-0.2 ***	.0002	2.2 (0.6)	2.1 (0.5)	-0.1	.0999
Number of respondents (range) ^c				122–154				91–130

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

Notes: Dietary intake measures estimated using NHANES Screener instrument. Excludes children who were younger than 24 months old at enrollment.

* Indicates statistical significance if the p-value is ≤ .05.

** Indicates statistical significance if the p-value is ≤ .01.

*** Indicates statistical significance if the p-value is ≤ .001.

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c A range is provided because the number of respondents varied by question.

Exhibit K-37. Outcome Analysis for Physical Activity Measures for Caregivers with Eligible Child: Pilot Study (RQ1d)

Measure	Initial Mean (SD)	Interim Mean (SD)	Change ^a	p-value for t-test	Initial Mean (SD)	Final Mean (SD)	Change ^b	p-value for t-test
Number of minutes of moderate or vigorous physical activity per week for caregiver (minutes/week) ^c	169.7 (107.3)	162.7 (121.2)	-7.0	.4637	171.1 (106.2)	185.4 (124.5)	14.2	.1369
Number of hours caregiver watches TV or DVDs daily	2.1 (1.5)	2.2 (1.6)	0.2 *	.0470	2.0 (1.4)	2.2 (1.6)	0.2	.0652
Number of days per week caregiver plays outside with child (> 12 mo. old)	4.5 (2.1)	3.2 (2.1)	-1.3 ***	<.0001	4.4 (2.1)	4.4 (2.2)	0.0	.8317
Number of hours per week child (> 12 mo. old) plays outside	15.9 (13.3)	9.1 (8.9)	-6.8 ***	<.0001	15.3 (12.0)	16.5 (12.4)	1.3	.1133
Number of hours child (> 12 mo. old) spends on screen time daily (TV, DVDs, video, or computer games) ^d	2.4 (2.1)	2.6 (2.0)	0.2	.1973	2.4 (2.2)	2.7 (1.8)	0.3 *	.0361
Number of respondents (range) ^e			192–307				182–261	

Source: Participant Surveys, Initial, July 2015; Interim, ~6 months after enrollment; Final, ~12 months after enrollment

* Indicates statistical significance if the p-value is ≤ .05.

*** Indicates statistical significance if the p-value is ≤ .001.

^a Within-person change over time between initial and interim.

^b Within-person change over time between initial and final.

^c See Appendix J for a description of how the outcome variable was derived using responses to questions on number of days of physical activity and minutes per day.

^d See Appendix J for a description of how the outcome variable was derived using responses to questions on number of hours of use for different types of devices (e.g., TV, video games).

^e A range is provided because the number of respondents varied by question.

Exhibit K-38. Bivariate Analysis for the Measures of Interest, Initial Values by Pilot Site

Measure	Site A		Site B		Site C		Site D		Site E		Site F		Wilcoxon's Test (p-value)
	n	%	n	%	N	%	n	%	n	%	n	%	
Women Who Were Pregnant at Enrollment													
Self-efficacy to almost always eat brown rice instead of white ^a													
Low	8	33.3	7	25.0	6	20.7	7	36.8	4	16.7	6	24.0	.7247
Moderate	10	41.7	11	39.3	13	44.8	6	31.6	8	33.3	7	28.0	
High	6	25.0	10	35.7	10	34.5	6	31.6	12	50.0	12	48.0	
Number of respondents	24		28		29		19		24		25		
Caregivers with Eligible Child													
Readiness to serve child (aged 1–4) SSBs no more than once a month ^b													
Not thinking about doing it	35	56.5	31	52.5	37	66.1	38	51.4	26	49.1	27	40.3	.1645
Thinking about doing it	2	3.2	2	3.4	4	7.1	4	5.4	2	3.8	6	9.0	
Planning on doing it in next month	4	6.5	2	3.4	3	5.4	2	2.7	4	7.5	5	7.5	
Have been doing it for less than 6 months	10	16.1	5	8.5	4	7.1	11	14.9	7	13.2	3	4.5	
Have been doing it for 6 months or longer	11	17.7	19	32.2	8	14.3	19	25.7	14	26.4	26	38.8	
Self-efficacy to serve child (aged 1–4) SSBs no more than once a month ^a													
Low	18	29.0	18	30.0	21	38.9	21	28.4	15	28.3	13	18.8	.3594
Moderate	10	16.1	4	6.7	9	16.7	10	13.5	6	11.3	13	18.8	
High	34	54.8	38	63.3	24	44.4	43	58.1	32	60.4	43	62.3	

(continued)

Exhibit K-38. Bivariate Analysis for Measures of Interest, Initial Values by Pilot Site (continued)

Measure	Site A		Site B		Site C		Site D		Site E		Site F		McNemar's Test (p-value)	
	n	%	n	%	N	%	n	%	n	%	n	%		
Caregiver cooks homemade dinner for child (aged 6 mo–4 yr)														
Percentage that answered “almost every day” or “every day”	50	80.6	49	83.1	51	89.5	64	86.5	45	88.2	66	89.2	.6457	
Measure	Site A		Site B		N	Site C		Site D		Site E		Site F		p-value for ttest
	n	Mean, SD	n	Mean, SD		n	Mean, SD	n	Mean, SD	n	Mean, SD	n	Mean, SD	
Child’s (aged 2–4) dietary intake for whole grains (oz/day)														
Mean, SD	26	0.6, 0.3	33	0.5, 0.2	29	0.6, 0.2	49	0.6, 0.3	31	0.5, 0.2	47	0.6, 0.2	.2786	
Number of hours child (aged 1–4) spends on screen time daily														
Mean, SD	60	3.0, 2.6	57	2.1, 2.1	57	2.8, 2.4	74	2.4, 2.1	52	2.9, 2.3	74	2.4, 2.1	.2234	
Number of respondents ^c	26–62		33–60		29–57		49–74		31–53		47–74		.	

Source: Participant Survey, Initial

^a The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure).

^b Response categories can be mapped to the stages of change: not thinking about doing it = precontemplation, thinking about doing it = contemplation, planning on doing it next month = planning, have been doing it for less than 6 months = action, and have been doing it for 6 months or longer = maintenance.

^c A range is provided because the number of respondents varied by question.

SD = standard deviation, SSBs = sugar-sweetened beverages (i.e., regular soda or pop, sweetened fruit drinks, sports drinks, and energy drinks)

Exhibit K-39. Bivariate Analysis for the Measures of Interest, Initial Values by Length of Time Participant/Child has Received WIC Benefits

Measure	Receive WIC Benefits < 30 days		Receive WIC Benefits 1 Month or Longer		Wilcoxon's Test (p -value)
	n	%	n	%	
Women Who Were Pregnant at Enrollment					
Self-efficacy to almost always eat brown rice instead of white ^a					
Low	4	12.5	31	29.2	.1305
Moderate	13	40.6	40	37.7	
High	15	46.9	35	33.0	
Number of respondents	32		106		
Caregivers with Eligible Child					
Readiness to serve child (aged 1–4) SSBs no more than once a month ^b					
Not thinking about doing it	9	64.3	178	52.0	.6733
Thinking about doing it	1	7.1	18	5.3	
Planning on doing it in next month	0	0.0	19	5.6	
Have been doing it for less than 6 months	2	14.3	34	9.9	
Have been doing it for 6 months or longer	2	14.3	93	27.2	
Self-efficacy to serve child (aged 1–4) SSBs no more than once a month ^a					
Low	2	15.4	98	28.5	.4516
Moderate	3	23.1	47	13.7	
High	8	61.5	199	57.8	
Measure	Receive WIC Benefits < 30 days		Receive WIC Benefits 1 Month or Longer		McNemar's Test (p -value)
	n	%	n	%	
Caregiver cooks homemade dinner for child (aged 6 mo–4 yr)					
Percentage that answered "almost every day" or "every day"	10	83.3	303	86.3	.7675
Measure	Receive WIC Benefits < 30 days		Receive WIC Benefits 1 Month or Longer		p -value for t test
	N	Mean, SD	n	Mean, SD	
Child's (aged 2–4) dietary intake for whole grains (oz/day)					
Mean, SD	6	0.6, 0.2	199	0.6, 0.3	.7661
Number of hours child (aged 1–4) spends on screen time daily					
Mean, SD	13	2.5, 3.0	346	2.5, 2.2	.9767
Number of respondents ^a	6–14		199–351		

Source: Participant Survey, Initial

^a The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure).

^b Response categories can be mapped to the stages of change: not thinking about doing it = precontemplation, thinking about doing it = contemplation, planning on doing it next month = planning, have been doing it for less than 6 months = action, and have been doing it for 6 months or longer = maintenance.

^c A range is provided because the number of respondents varied by question.

SD = standard deviation, SSBs = sugar-sweetened beverages

Exhibit K-40. Bivariate Analysis for Measures of Interest, Initial Values by Whether Participant Completed Part 1 of Initial Survey Before or After their Appointment ^a

Measure	Completed Part 1 Before Appointment		Completed Part 1 After Appointment		p-value
	n	%	n	%	
Women Who Were Pregnant at Enrollment					
Self-efficacy to almost always eat brown rice instead of white ^b					
Low	25	25.8	12	27.9	.5836
Moderate	34	35.1	18	41.9	
High	38	39.2	13	30.2	
Number of respondents	97		43		
Caregivers with Eligible Child					
Readiness to serve child SSBs no more than once a month ^c					
Not thinking about doing it	116	51.1	71	55.9	.3972
Thinking about doing it	15	6.6	5	3.9	
Planning on doing it in next month	15	6.6	4	3.1	
Have been doing it for less than 6 months	25	11.0	11	8.7	
Have been doing it for 6 months or longer	56	24.7	36	28.3	
Self-efficacy to serve child SSBs no more than once a month ^b					
Low	62	27.3	40	31.3	.7309
Moderate	33	14.5	18	14.1	
High	132	58.1	70	54.7	
Measure	n	Mean, SD	n	Mean, SD	p-value
Child's (aged 2–4) dietary intake for whole grains (oz/day)					
Mean, SD	131	0.6, 0.3	76	0.5, 0.2	.0662
Number of respondents ^d	131–231		76–130		

Source: Participant Survey, Initial

^a Two variables are not included in the table because the questions were asked in Part 2: caregiver cooks homemade dinner for child and number of hours the child spends on screen time daily.

^b The question asked how sure the respondent was that she could do the behavior: low (not sure), moderate (somewhat sure), and high (very sure).

^c Response categories can be mapped to the stages of change: not thinking about doing it = precontemplation, thinking about doing it = contemplation, planning on doing it next month = planning, have been doing it for less than 6 months = action, and have been doing it for 6 months or longer = maintenance.

^d A range is provided because the number of respondents varied by question.

SD = standard deviation

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APPENDIX L
SUPPLEMENTAL AND SENSITIVITY ANALYSIS

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This appendix presents supplemental and sensitivity analysis for the pilot study. Section L.1 provides a comparison of self-reported data from the Participant Surveys with the sample of WIC administrative data provided by each site. Section L.2 provides information on the analysis of internal consistency for potential composite measures for use in the impact evaluation analyses.

L.1 Comparison of Self-Reported Data from Participant Surveys and WIC Administrative Data

Participants who completed the Participant Surveys were asked to recall the number of visits to the WIC office during the previous 6-month period where they received information on health or healthy eating. This self-report of visits where they received this type of information served as a proxy for the number of nutrition education contacts received during WIC visits for use in the impact evaluation. As described below, some participants may have misunderstood the question, so it is suggested that the question be revised if used in future studies. Appendix I, Exhibit I-3 shows the average number of visits by the three enrollment groups (pregnant, postpartum, and caregiver with child) and the six sites for three data collection periods (initial, interim, and final). Respondents are included in the study subpopulation they were in when they enrolled in the study (e.g., women who were pregnant at enrollment stayed in this category for analysis purposes). Some participants may have changed WIC categories during the study evaluation period (i.e., prenatal women become postpartum). Also, WIC eligibility for some participants may have ended during the evaluation period (e.g., postpartum women who are not breastfeeding are eligible for only 6 months after delivery), but these women continued to be part of the study group (in which they enrolled) if their child was receiving WIC benefits.

Across all sites, women who were pregnant when enrolled in the study reported an average of 2.7 visits the 6 months before the initial data collection, 2.2 visits the 6 months before the interim data collection, and 1.8 visits the 6 months before the final data collection.¹ Women who were postpartum at study enrollment reported an average of 2.4 visits the 6 months before the initial data collection, 2.0 visits the 6 months before the interim data collection, and 1.3 visits the 6 months before the final data collection. Parents/caregivers of an eligible child enrolled in the study reported an average of 2.2 visits the 6 months before the initial data collection, 1.5 visits the 6 months before the interim data collection, and 1.2 visits the 6 months before the final data collection. Thus, participants generally reported an average of 2 visits for a 6-month time period, which is consistent with Federal WIC requirements. The exception to this is the final time period for women who were postpartum at enrollment or a parent/caregiver of an eligible child, where the average number of visits

¹ Pregnant women who were in their first or second trimester completed the interim survey approximately 1 month before their delivery date and completed the final survey approximately 6 months postpartum. Pregnant women who were in their third trimester, women who were postpartum at enrollment, and caregivers of an eligible child completed the interim survey approximately 6 months after the initial survey and completed the final survey approximately 12 months after the initial survey.

was 1.2 to 1.3. Many of the postpartum women would not have been WIC participants themselves for the full pilot study evaluation period but may have received education for their child during the later months of the study, which may explain why their report of contacts is similar to the caregivers group.

Each site provided WIC administrative data for about 30 to 35 participants enrolled in the pilot, including the dates when nutrition education contacts occurred for the same 18-month time period that participants reported on in the self-administered Participant Surveys. The pilot sites confirmed that nutrition education contacts provided through all modes, including Internet education, were included in the administrative data. A comparison of these data with the Participant Survey data is provided in **Exhibits L-1** and **L-2**. **Exhibit L-1** provides a comparison of the mean number of visits with nutrition education based on the self-reported Participant Survey data and the administrative data. The mean number of visits recorded in the sample of administrative data is about one visit or less and is lower at each time period (initial, interim, and final) compared with the self-reported Participant Survey data. In about 21 to 27% of cases, the administrative data reported no nutrition education contacts during the evaluation period, whereas the participant reported one or more nutrition education contacts. One possible reason for this difference for pregnant and postpartum women is that the women's WIC eligibility may have ended during the evaluation period. Those women continued to receive WIC for their eligible infants and reported visits with nutrition education on the Participant Surveys, but the nutrition education contacts would be associated with the infant's administrative record, which was not requested from the sites. Thus, for future evaluation studies, consideration should be given to requesting the infant's administrative record as well.

Exhibit L-2 provides a distribution of the percentage of participants for which there was no difference between the administrative and survey data and, in cases where there was a difference, the magnitude of the difference (e.g., difference of one contact, two contacts). No difference between the administrative and survey data was observed in about 13 to 34% of cases, with a smaller percentage of cases showing no difference for the initial survey. For the remaining participants, the difference between the survey and administrative data was generally one to three contacts. In addition to changes in women's eligibility as described above, other possible reasons for these differences are inaccurate recall, timing of the receipt of the survey and the participant's WIC visits, contacts that were not recorded in the participants' administrative records, and other unknown factors. The differences between the self-reported data and administrative data underscore the challenge in obtaining accurate information on number of nutrition education contacts. For a national evaluation study, it is recommended that "real-time" data be obtained on number and length of contacts either by having the participant record the information electronically immediately following their visit (e.g., by completing a survey on their smartphone after receiving a text message) or working with the site to establish a system to accurately capture information on number and length of contacts.

Analyses were also conducted to compare the self-reported risk status of participants based on responses to the Participant Surveys with information from the administrative data on participant risk status. The following question was asked in the Participant Surveys to collect information on risk status:

In the past 6 months, have you been told by your doctor or other health care professional that you/your child:

Caregiver with child:

- a. Was a preemie or premature as a baby
- b. Needs special infant formula
- c. Is low weight
- d. Is overweight
- e. Has high blood lead

Pregnant and postpartum women:

- a. Anemia or low iron
- b. Excessive weight gain
- c. Diabetes, gestational diabetes, or high blood sugar
- d. High blood pressure

Participants were assigned a status of high risk if they selected one or more responses. The administrative data provided information at the participant level on whether the participant or her child (if caregiver/mother of child) has a health condition that would make them high risk. High-risk status is determined through the nutrition and health assessment process conducted by authorized WIC staff and is based on criteria or guidelines set by each State agency. Data were not collected on the risk status criteria used by each of the six pilot sites.

Based on the administrative data, 59 participants were considered high risk. Comparing this information to the self-reported data from the participants, 34% of the cases matched (i.e., classified as high risk based on the administrative data and survey data), and 66% of the cases did not match. This suggests that the risk status criteria used by the sites are different than the health conditions asked about in the survey or that participants did not understand or accurately complete the Participant Survey. It could also mean that there were errors in the administrative data. For future evaluation studies, consideration should be given to collecting administrative data from all sites participating in the evaluation study so that administrative data are used to provide information on participant risk status, because these data would likely be more accurate than self-reported data.

Exhibit L-1. Mean Number of Nutrition Education Contacts for Sample of Participants, by Data Source (Participant Survey Versus Administrative Data)

Data Source	Pregnant at Enrollment	Postpartum at Enrollment	Caregiver with Child
6-Month Period before Initial Survey			
Self-reported data from Participant Survey data	2.6	2.4	2.4
Administrative data	1.4	1.6	1.4
Difference ^a	1.2	0.8	1.0
Number of participants	28	30	146
6-Month Period before Interim Survey			
Self-reported data from Participant Survey data	2.2	2.0	1.3
Administrative data	0.8	0.7	0.8
Difference ^a	1.4	1.3	0.5
Number of participants	28	30	145
6-Month Period before Final Survey			
Self-reported data from Participant Survey data	1.5	1.5	1.2
Administrative data	0.7	0.3	1.1
Difference ^a	0.8	1.2	0.1
Number of participants	29	28	142

Sources: Participant Surveys: Initial, Interim, and Final and administrative data from the six sites.

^a Difference = Participant Survey Mean – Administrative Data Mean

Notes: Participants were asked the following question at the initial, interim, and final time periods: "In the past 6 months, how many times did you visit a WIC office and get information on health or healthy eating? Include the day you signed up for this study. Do not include visits for other reasons such as picking up a food instrument or voucher or taking a friend to her appointment." For the initial survey, the following additional instructions were provided: "Mark Once" if the day you signed up for this study was your first visit to a WIC office." The response options were "none," "once," "2 times," "3 times," "4 times," "5 times," and "6 or more times." For the initial survey only, if a respondent answered "none," a value of "1" was assigned to calculate a mean because the respondent should have answered "Once" because they had to have visited a WIC office for an appointment to enroll in the study; thus, it was assumed the participant received nutrition education. A value of "6" was assigned to calculate a mean if a respondent answered 6 or more times.

Pregnant women who were in their first or second trimester completed the interim survey approximately 1 month before their delivery date and completed the final survey approximately 6 months postpartum. Pregnant women who were in their third trimester, women who were postpartum at enrollment, and parents or caregivers of a child completed the interim survey approximately 6 months after the initial survey and completed the final survey approximately 12 months after the initial survey.

Exhibit L-2. Participant-Level Comparison for Number of Nutrition Education Contacts Based on Self-Reported Participant Survey Data and Administrative Data for Sample of Participants ^a (Percentage of Participants)

Comparisons	Pregnant at Enrollment	Postpartum at Enrollment	Caregiver with Child
6-Month Period Before Initial Survey			
No difference between number of contacts self-reported in survey and administrative data	17.9%	13.3%	22.6%
Difference of ± 1 contacts	35.7%	36.7%	38.4%
Difference of ± 2 contacts	14.3%	20.0%	19.9%
Difference of ± 3 contacts	17.9%	23.3%	6.8%
Difference of ± 4 contacts	14.3%	6.7%	6.2%
Difference of ± 5 or more contacts	0.0%	0.0%	6.2%
Total	100.0%	100.0	100.0%
Number of participants	28	30	46
6-Month Period Before Interim Survey			
No difference between number of contacts self-reported in survey and administrative data	25.0%	26.7%	27.6%
Difference of ± 1 contacts	28.6%	36.7%	39.3%
Difference of ± 2 contacts	14.3%	16.7%	22.8%
Difference of ± 3 contacts	21.4%	10.0%	6.2%
Difference of ± 4 contacts	10.7%	0.0%	3.4%
Difference of ± 5 or more contacts	0.0%	10.0%	0.7%
Total	100.0%	100.0%	100.0%
Number of participants	28	30	145

(continued)

Exhibit L-2. Participant-Level Comparison for Number of Nutrition Education Contacts Based on Self-Reported Participant Survey Data and Administrative Data for Sample of Participants ^a (Percentage of Participants) (continued)

Comparisons	Pregnant at Enrollment	Postpartum at Enrollment	Caregiver with Child
6-Month Period Before Final Survey			
No difference between number of contacts self-reported in survey and administrative data	20.7%	32.1%	33.8%
Difference of ± 1 contacts	31.0%	32.1%	37.3%
Difference of ± 2 contacts	27.6%	10.7%	19.0%
Difference of ± 3 contacts	20.7%	10.7%	5.6%
Difference of ± 4 contacts	0.0%	7.1%	2.1%
Difference of ± 5 or more contacts	0.0%	7.1%	2.1%
Total	100.0%	100.0%	100.0%
Number of participants	29	28	142

Sources: Participant Surveys: Initial, Interim, and Final and administrative data from the six sites.

^a The tabled values are the percentage of participants for whom the number of visits self-reported in the Participant Survey is equal to the number of visits recorded in the administrative data or in cases where there are differences between the Participant Survey and administrative data, the percentage of participants for whom the number of visits is different by one contact, two contacts, three contacts, and so on.

Notes: Participants were asked the following question at initial, interim, and final: "In the past 6 months, how many times did you visit a WIC office and get information on health or healthy eating? Include the day you signed up for this study. Do not include visits for other reasons such as picking up a food instrument or voucher or taking a friend to her appointment." For the initial survey, the following additional instructions were provided: "Mark 'Once' if the day you signed up for this study was your first visit to a WIC office." The response options were "none," "once," "2 times," "3 times," "4 times," "5 times," and "6 or more times." For the initial survey only, if a respondent answered "none," a value of "1" was assigned to calculate a mean because the respondent should have answered "Once" because they had to have visited a WIC office for an appointment to enroll in the study; thus, it was assumed the participant received nutrition education. A value of "6" was assigned to calculate a mean if a respondent answered 6 or more times.

Pregnant women who were in their first or second trimester completed the interim survey approximately 1 month before their delivery date and completed the final survey approximately 6 months postpartum. Pregnant women who were in their third trimester, women who were postpartum at enrollment, and parents or caregivers of a child completed the interim survey approximately 6 months after the initial survey and completed the final survey approximately 12 months after the initial survey.

L.2 Analysis of Internal Consistency for Potential Composite Measures

To assess whether some of the measures could be simplified by creating composite measures, standardized Cronbach coefficients were calculated to assess the internal consistency of the measures. **Exhibit L-3** presents the results of this analysis. Except for the composite for efficacy for serving whole grains instead of refined grains (comprising three separate measures), most of the composite measures were not found to be highly correlated; thus, the decision was made to not create any composite measures. This is not surprising because when developing the questions the intent was not to create composite measures.

Exhibit L-3. Correlation Coefficients for Potential Composite Measures

Measures	Standardized Cronbach Coefficient Alpha
<i>Caregivers with eligible child</i>	
(1) Efficacy for serving whole grain bread (2) efficacy for serving brown rice, and (3) efficacy for serving whole wheat or corn tortillas (versus refined grains)	0.76
(1) Efficacy to limit 100% juice and (2) efficacy to limit SSBs	0.30
(1) Plan meals ahead of time and (2) use Nutrition Facts on food labels	0.45
(1) Caregiver eats meal with child, (2) caregiver cooks homemade meal at dinner, and (3) child does not eat meal while watching TV	0.34
Child feeding style behaviors to discourage: (1) tried to get child to finish food/drink, (2) tried to get child to eat when not hungry, (3) carefully controlled how much child eats/drinks, and (4) let child eat desserts/sweets to keep happy	0.56
<i>Pregnant or postpartum at enrollment</i>	
(1) Efficacy for serving whole grain bread (2) efficacy for serving brown rice, and (3) efficacy for serving whole wheat or corn tortillas (versus refined grains)	0.76
(1) Efficacy to limit 100% juice and (2) efficacy to limit SSBs	0.37

Source: Participant Surveys, Initial

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APPENDIX M
MODEL SPECIFICATIONS FOR THE IMPACT EVALUATION

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This appendix provides information on the specification of the models used to answer the research questions (RQs) for the impact evaluation. RQs 1f through 9 were addressed with a series of statistical regression models. Sections M.1 through M.3 present the general form for three modeling approaches: (1) models that explicitly model change based on participant-level data, (2) models that implicitly model change based on participant-level data, and (3) models that implicitly model change based on participant-level and site-level data. In Section M.4, additional elaboration is provided for the statistical model that was used to address each research question.

M.1 Difference-in-Difference Models

M.1.1 Multilevel Model Presentation

RQs 1f and 3c examine the effects of exposure to nutrition education; these questions were addressed using difference-in-difference (DiD) models. The models are referred to as growth models and can be expressed in a multilevel or mixed-effects form (Singer & Willett, 2003). In the multilevel form, the simplest expression requires three models: one observation-level model (L1) that describes the outcome of interest as a function of initial status and change over time and two individual-level models (L2) that articulate each parameter of the observation-level model. The expression of the multilevel model shown below is appropriate for continuous measures. This model can be extended to address dichotomous measures and ordinal measures by specifying the correct distributional form and linking structure.

Observation-level model (L1). In the L1 model (equation [1]), Y_{it} represents the response of the i^{th} mother or caregiver measured on occasion t . The model includes two parameters, one describing initial status, (β_{0i}) and the other (β_{1i}) describing the incremental change in Y_{it} associated with a one-unit change in the variable TIME. Any variation between the predicted value and the observed value is accounted for by residual error (e_{it}) .

$$Y_{it} = \beta_{0i} + \beta_{1i} \text{ TIME} + e_{it} \quad (1)$$

Individual-level models (L2). In the L2 models, each of the parameters (β) from the observation-level model is expanded. The first L2 model (equation [2]) describes β_{0i} , the initial status of the i^{th} participant as a function of the grand mean or intercept value of all persons (γ_{00}) and a random effect (u_{0i}) that allows for variation from the intercept value. The model also includes a variable (EXP) indicating the participant's level of exposure to WIC nutrition education (based on the results of the latent class analysis [LCA], participants were classified as low or high exposure) and a six-level fixed-effect variable that accounts for site-to-site variations. The model also includes a set of demographic and household characteristic covariates (adult participant age, child age, participant race/ethnicity,

participant education, language(s) spoken at home, single-adult household, food insecurity status, length of time receiving WIC benefits, currently participate in other food assistance programs, and whether participant/child has health concerns that may make them high risk).

$$\beta_{0i} = \gamma_{00} + \gamma_{01}EXP + \sum \gamma_{02...k}X_{02...k} + u_{0i} \quad (2)$$

The second individual-level model (equation [3]) describes β_{1i} , the change or growth over time of the i^{th} mother or caregiver as a function of the mean slope value and a random effect (u_{1i}) that allows for individual variation from the mean slope. The model also includes a variable (EXP) indicating the participant's level of exposure to WIC nutrition education; the coefficient γ_{11} describes the difference i over time between persons receiving different levels of exposure to WIC nutrition education.

$$\beta_{1i} = \gamma_{10} + \gamma_{11}EXP + u_{1i} \quad (3)$$

M.1.2 Mixed-Effects Model Presentation

The three models described above can be combined into the mixed-effects model shown in equation (4).

$$Y_{ii} = \gamma_{00} + \gamma_{01}EXP + \gamma_{10}TIME + \gamma_{11}TIME * EXP + \sum \gamma_{02...k}X_{02...k} + u_{0i} + u_{1i}TIME + e_{ii} \quad (4)$$

This expression is often easier to understand and is used throughout the remainder of this appendix when it is necessary to specify a model. Several key features of the multilevel, or mixed-effects, model become more apparent in this form. First, it is important to notice in equation (4) that collapsing the L1 and L2 models creates the cross-level interaction TIME * EXP. This is a necessary feature of the model and required to quantify the effects of any L2 variable on a participant's change over time. Second, the model includes all three random effects described in the L1/L2 expression.

M.2 Simple Difference Model at Participant Level

RQs 2, 3d, 4, 6a, 6c, 7, 8, and 9 examine the effect of features or attributes on WIC nutrition education measures at the participant level on participant behavior. These research questions were addressed using regression models that examined the relationship between the characteristics or attributes and the measure of the outcome, controlling for the initial value of the outcome and other potential confounders. These models are referred to as covariate-adjusted models or adjusted endpoint models (equation 5).

$$Y_i = \gamma_0 + \gamma_1X_1 + \sum \gamma_{2..k}X_{2..k} + e_i \quad (5)$$

For these models, the outcome (Y_i) represents the response of the i^{th} mother or caregiver measured at the final time period, and the participant's initial measure of the outcome is

included as a covariate (X_1) to control for the participant’s starting value. Additional covariates ($X_{2...k}$) were added to the model based on the features, attributes, or characteristics detailed in the research questions. The covariates were created using responses to the Participant Surveys. For research questions addressing impact, the CLASS variable indicating exposure (high versus low) was added to the model and crossed with the covariates. The endpoint-adjusted model is simpler than the repeated measures model (equation [4]) and, on expectation, offers more statistical power for explanatory purposes. These models also include a six-level fixed-effect variable that accounts for site-to-site variations and two demographic measures (age of the target child and length of time receiving WIC benefits).

M.3 Simple Difference Model at Site Level

RQs 3a, 3b, 5, and 6b examine the effect of site-level factors on participant behavior. These research questions were addressed using regression models that examined the relationship between site-level factors and the measure of the outcome controlling for the initial value of the outcome and other potential confounders. These models are referred to as covariate-adjusted models, or adjusted endpoint models.

$$Y_{i:g} = \gamma_{i:0} + \gamma_{1:g} X_{1:g} + \sum \gamma_{2:g...k:g} X_{2:g...k:g} + \sum \gamma_{i1...ik} W_{i1...ik} + u_{i:0} + e_{i:g} \quad (6)$$

The mixed-effects form of this model is presented in equation (6). For these models, the outcome $Y_{i:g}$ represents the final measure of the i^{th} person from the g^{th} site, and the participant’s initial measure of the outcome is included as a covariate ($X_{1:g}$) to control for the participant’s starting value. Independent variables at the site level ($\sum W_{i1...ik}$) were added to the model based on the research questions. Covariates at the individual level ($\sum X_{2:g...k:g}$) include two demographic measures (age of the target child and length of time receiving WIC benefits). The model includes a random effect ($u_{i:g}$) that accounts for site-level variation from the overall mean.

M.4 Model Specification to Address Each Research Question for the Impact Evaluation

Further information on the model specification for each research question is provided below. **Exhibits M-1** through **M-12** provide information on how the independent variables were created.

RQ1f. How much of these changes can be attributed to WIC nutrition education?

RQ3c. Does the impact vary by dosage and duration of nutrition education?

RQs 1f and 3c examine the impact of exposure to nutrition education on participant behaviors (i.e., the impact analysis using the dosage or exposure categories from the latent class analysis or LCA). For each outcome, three models were specified. The first model is an unadjusted (UA) model. The UA model includes variables representing characteristics of the research design (i.e., time, exposure). The second model is a minimally adjusted (MA) model. The MA model includes variables representing characteristics of the research design, covariates that account for attrition from the study, age of the target child, and length of time receiving WIC benefits. The third is a fully adjusted (FA) model. The FA model includes variables representing characteristics of the research design and all demographic variables of interest to the study.

The statistical model to address this question is expressed in equation (4). For this research question:

- EXP is the categorical fixed-effect variable indicating a participant’s level of exposure (EXP) to WIC nutrition education.
- TIME is the variable indexing time period (i.e., initial or final).
- TIME * EXP is an interaction term that captures the effect of different levels of exposure over time on the outcome.
- For the MA model, $\sum \gamma_{02...0p} X_{02...0p}$ represents a reduced set of demographic covariates and their respective coefficients.
- For the FA model, $\sum \gamma_{02...0p} X_{02...0p}$ represents the full set of demographic covariates and their respective coefficients (adult participant age, child age [if applicable], participant race/ethnicity, participant education, language(s) spoken at home, single-adult household, food insecurity status, length of time receiving WIC benefits, currently participate in other food assistance programs, whether participant/child has health concerns that may make them high risk). The selection of these variables was based on the conceptual model for the study. **Exhibit M-1** provides information on how these variables were created.

RQ2. Are there particular combinations of features of WIC nutrition education that are more effective than other combinations in achieving improvements in readiness to eat a healthy diet, readiness to feed the child participant a healthy diet, dietary habits, physical activity habits, and food-related behaviors?

RQ2 examines the association between features of WIC nutrition education and the measures of interest. The statistical model to address this research question is expressed in

equation (5). The following variables were included in the model and were created using data from the Participant Surveys (see **Exhibit M-2**).

- FU is a count variable (0 through 6) that indicates the number of different types of follow-ups (i.e., personal phone calls, text messages, email messages, online education, social media invitations, and brochures and handouts) reported by the participant.
- VENA is a dichotomous variable indicating the use of participant-centered practices.
- GOAL is a dichotomous variable indicating whether goals were set.
- COMSI is a continuous measure of communication style for individual sessions. This measure was constructed using three items that asked participants about the type of communication they experienced during their nutrition education session.
- VID is a dichotomous variable indicating whether participants reported the use of a video or DVD during their education session.

RQ3a. Does the impact vary by nutrition educator characteristics?

RQ3a examines site-level variables that may affect the measures of interest. The statistical model to address this question is expressed in equation (6). Each of the following site-level variables was examined singularly in a series of models using data from the Nutrition Educator Survey (see **Exhibit M-3**):

- YEAR is a continuous variable indicating the mean number of years of experience providing WIC nutrition education at the site level.
- AGEST is a continuous variable representing the average age of the site staff (i.e., nutrition educators).
- VTRN is a continuous variable for the percentage of staff who have received training in Value Enhanced Nutrition Assessment (VENA) skills, participant-/learner-centered education, motivational interviewing, or emotion-based counseling in the past 12 months.
- EDU is a continuous variable for the percentage of nutrition education staff who have a bachelor's or graduate degree.
- CRED is a continuous variable for the percentage of nutrition education staff who are registered dietitians (RDs) or licensed dietitian/nutritionists (LDs/LNs).

RQ3b. Does the impact vary by agency characteristics?

RQ3a examines site-level variables that may affect the measures of interest. The statistical model to address these questions is expressed in equation (6). Each of the following site-level variables was examined singularly in a series of models using data from the Phase I Site Survey and Point of Contact [POC] Interviews (see **Exhibit M-4**):

- CSLD is a continuous variable representing the caseload (average number of food packages issued) for the site.
- RATIO is a continuous variable representing the nutrition educator full-time equivalent (FTE)-to-client ratio.

RQ3c. Does the impact vary by dosage and duration of nutrition education?

RQ3c is addressed in the impact analysis, which is RQ1f (see above).

RQ3d. Does the impact vary by the participant's characteristics, length of time on WIC, exposure to previous WIC nutrition education, participation in other programs, or use of emergency food providers?

RQ3d examines the effect of participant or household characteristics on the measures of interest. The statistical model to address these questions is expressed in equation (5). The following variables were included in the model and were created using data from the Participant Surveys (see **Exhibit M-5**).

- AGE is a continuous variable representing the adult participant's age (years).
- RACE4 is a four-level categorical variable indicating the participant's race/ethnicity.
- EDUCATION is a four-level categorical variable indicating the participant's education level.
- LANGUAGE3 is a three-level categorical variable indicating the language(s) spoken at home.
- SINGLEHH is a categorical variable indicating whether the household is a single-adult household.
- FOOD_SECURITY is a dichotomous variable indicating whether the participant's household is food insecure.
- FA_CURRENT_FOOD is a dichotomous variable indicating whether the participant's household receives other food assistance (SNAP or food bank/food pantry/soup kitchen).
- HLTH_STATUS is a dichotomous variable indicating whether the participant (or child) has health concerns that may make them high risk.
- WICHH is a continuous variable representing the number of people in the household on WIC.

RQ4. What dosage and mode of nutrition education delivery (initial and follow-up) are most effective in helping participants improve their dietary and physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ4 examines the joint effect of exposure and mode of nutrition education. This is a special case of equation (5) that involves a two-way interaction between exposure (i.e., dosage) and mode. The covariates were created using data from the Participant Surveys. The following variables are included in the model:

- EXP is the categorical variable indicating a participant's level of exposure to WIC nutrition education.

- MODE is the categorical variable representing the participant’s mode of nutrition education (individual, group, online, multimode).
- EXP*MODE is an interaction term that accounts for differences in the participant’s intercept based on the mode of nutrition education.

RQ5. What attributes of individual nutrition education sessions are most effective in helping WIC participants improve their dietary and physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ5 examines characteristics of individual nutrition education sessions (only this mode or in combination with other modes) that may have affected the measures of interest. In addition to describing the delivery of one-on-one nutrition education sessions, the frequency with which other types of modes (group and technology based) are used to provide nutrition education was also considered. The model to address this question is expressed in equation (6). Each of the following site-level variables was examined separately in models that also included participant-level variables (see **Exhibit M-6**):

- OBX is a continuous variable created using data from the observation of individual nutrition education sessions to describe the extent to which the session aligned with VENA principles for participant-centered education (data source is the observations).
- GROUP is a dichotomous variable indicating whether the site uses group sessions for 11% or more of participants.
- ONLINE is a dichotomous variable indicating whether the site uses technology-based education for 40% or more of participants.

RQ6a. What attributes of group nutrition education sessions are most effective in helping WIC participants improve their dietary and physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ6a addresses variables that may have affected the measures of interest among participants who received only group education. The statistical model to address these questions is expressed in equation (5). The following variables were included in the model and were created using data from the Participant Surveys (see **Exhibit M-7**).

- VENAG is a dichotomous variable indicating the use of participant-centered practices during group sessions.
- GOALG is a dichotomous variable indicating the use of goal setting during group sessions.
- COMSG is a continuous measure of communication style during group sessions. This measure was constructed using three items that asked participants about the type of communication they experienced during their group session.

RQ6b. What skills and attributes of the nutrition educator (for group sessions) are most effective in helping participants improve their dietary and physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ6b addresses variables that may have affected the measures of interest among participants who received only group education. The model includes site-level variables, and the statistical model to address this question is expressed in equation (6). Each of the following site-level variables was examined singularly in a series of models using data from the Nutrition Educator Survey (see **Exhibit M-8**):

- AGEST is a continuous variable representing the average age of the site staff.
- VTRN is a continuous variable for the percentage of staff who have received training in VENA skills, participant-/learner-centered education, motivational interviewing, or emotion-based counseling in the past 12 months.
- EDU is a continuous variable for the percentage of staff who have a bachelor's or graduate degree.
- CRED is a continuous variable for the percentage of staff who are an RD or an LD/LN.
- GRPTRN is a continuous variable representing the percentage of staff who have received training in providing group facilitation in the past 12 months.
- YEAR is a continuous variable indicating the mean number of years of experience providing WIC nutrition education at the site level.

RQ6c. What types and dosage of reinforcers are most effective in helping participants improve their dietary and physical activity habits and their readiness to change these behaviors?

RQ6c examines the relationship between the use of reinforcers and the measures of interest. The research question asks about the dosage of reinforcers; this information is not available, so information on the number of different reinforcers was used. The statistical model to address this question is expressed in equation (5). Each of the variables listed below was included in the model using data from the Participant Surveys (see **Exhibit M-9**).

- REINFORCE is a count variable (0 to 6) that indicates the number of different reinforcers (i.e., brochure or handout, bulletin board, video/DVD, tasting or cooking demonstration, activity or game, items to be passed around) reported by the participant.
- VID is a dichotomous variable indicating whether participants reported the use of a video or DVD during their education session.
- BBOARD is a dichotomous variable indicating whether participants reported the use of a poster or bulletin board during their education session.
- BROC is a dichotomous variable indicating whether participants reported the use of a brochure or pamphlet during their education session.

- INTX is a dichotomous variable indicating whether participants reported the use of an interactive learning tool (e.g., tastings, activity/game, items) during their education session.

RQ7. What other characteristics of WIC nutrition education delivery are most effective in helping WIC participants improve their dietary and physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ7 addresses variables that report on the participant’s experience in the education session. The statistical model to address this research question is expressed in equation (5). The variable listed below was included in the model using data from the Participant Surveys (see **Exhibit M-10**).

- HELP is a dichotomous variable that indicates whether the participant believes the education session was helpful (1) or not (0).

RQ8. What experiences with WIC nutrition education are most often cited by women and child caretakers as motivating them to change their own or their children’s dietary and physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ8 addresses motivation to change (i.e., predictor of behavior) as measured by a set of questions pertaining to specific health behaviors based on the stages of change model. Relevant health behaviors for the outcomes of interest are eating whole grain foods, increasing physical activity, shopping and preparing healthier foods, and drinking water instead of sugar-sweetened beverages (SSBs). For each health behavior, participants were asked whether they discussed the topic in their most recent session and, on a 4-point scale, whether they are considering a change related to the health behavior. Accordingly, for each health behavior, participants were included in statistical models only if they indicated they had discussed the health behavior at their most recent visit. The statistical model to address this research question is expressed in equation (5). The following variables were included in the participant-level models using data from the Participant Surveys (see **Exhibit M-11**).

- REASNS is a continuous variable that asks participants to report (agree-disagree) whether they believe that they learned about good reasons to eat healthfully.
- WAYS is a continuous variable that asks participants to report (agree-disagree) whether they believe that they learned about good ways to eat healthfully.
- CHANGE is a four-level categorical variable indicating the participant’s level of interest in making a change related to the health behavior. Response options range from “I am not thinking about doing it” to “I am already doing it.” Separate variables were created for each health behavior.

RQ9. How does the content of WIC nutrition education affect participants' dietary, physical activity habits, readiness to change behaviors, and other food-related behaviors?

RQ9 addresses the health behaviors discussed during the most recent WIC nutrition education session. Relevant health behaviors for the outcomes of interest are eating whole grain foods, increasing physical activity, shopping and preparing healthier foods, and drinking water instead of SSBs. For each health behavior, participants were asked whether they discussed the topic in their most recent session. The statistical model to address this research question is expressed in equation (5). The following variable was included in the participant-level model using data from the Participant Surveys (see **Exhibit M-12**):

- TALK is a dichotomous variable that indicates whether the participant reported discussing the health domain behavior in the past 6 months (1) or not (0). Separate variables were created for each health behavior.

M.5 Process Evaluation Research Questions Partially Addressed with Modeling Conducted as Part of the Impact Evaluation

RQ10h from the set of research questions for the process evaluation states: "What characteristics of the nutrition education goal-setting process are most significantly associated with positive behavioral outcomes for participants?" This research question was partially addressed by including the use of goal setting as a variable in the models used to address RQs 2 and 5.. The findings from the process evaluation regarding goal setting were used to supplement the findings from the quantitative analysis.

RQ10g from the process evaluation states: "How is the type of nutrition education training that individual WIC educators receive associated with positive behavioral outcomes for participants?" This research question was partially addressed by including whether the educator has received specific types of training in the models used to address RQs 3a and 6b. The findings from the process evaluation regarding training were used to supplement the findings from the quantitative analysis.

M.6 References

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford Press.

Exhibit M-1. RQ1f—How much of these changes can be attributed to WIC nutrition education?, RQ3c—How does the impact of WIC nutrition education vary by dosage and duration?, RQ4—What dosage and mode are most effective?

Variable Name	Description/Source	Survey Question	Variable Creation
AGE	Continuous variable representing the adult participant's age (years). Source: Enrollment Screener Questionnaire.	Month, day, and year of birth	Calculated age (years) based on birthdate
CHAGE	Continuous variable representing the child's age (months). Source: Enrollment Screener Questionnaire.	Month, day, and year of birth (only applicable for caregiver with eligible child)	Calculated age (months) based on birthdate
HLTH_STATUS	Dichotomous variable indicating whether the participant (or child) has health concerns that may make them high risk. Source: Participant Surveys.	In the past 6 months, have you been told by your doctor or other health care professional that you/your child: Caregiver with child: a. Was a preemie or premature as a baby b. Needs special infant formula c. Is low weight d. Is overweight e. Has high blood lead Pregnant and postpartum women: a. Anemia or low iron b. Excessive weight gain c. Diabetes, gestational diabetes, or high blood sugar d. High blood pressure	Created binary variable: 1 = answered "yes" to 1 or more conditions; otherwise = 0

(continued)

Exhibit M-1. RQ1f—How much of these changes can be attributed to WIC nutrition education?, RQ3c—How does the impact of WIC nutrition education vary by dosage and duration?, RQ4—What dosage and mode are most effective? (continued)

Variable Name	Description/Source	Survey Question	Variable Creation
RACE4	A four-level categorical variable indicating whether the adult participant is Hispanic, White, non-Hispanic, Black, non-Hispanic, or Other. Source: Participant Surveys.	Are you Hispanic or Latino? What is your race? (multiple responses allowed)	Responses to the two questions were combined to create a four-level categorical variable. Respondents indicating they were Hispanic or Latino were given priority over other race and ethnicity designations and assigned to "Hispanic." Respondents indicating they were not Hispanic and only selected Black or African-American as their race were assigned to "Black, non-Hispanic." Respondents indicating they were not Hispanic and only selected White or Caucasian as their race were assigned to "White, non-Hispanic," which is the reference group for the analysis. Respondents indicating they were American Indian or Alaska Native, Asian or Native Hawaiian, or who selected more than one race were assigned to "Other."

(continued)

Exhibit M-1. RQ1f—How much of these changes can be attributed to WIC nutrition education?, RQ3c—How does the impact of WIC nutrition education vary by dosage and duration?, RQ4—What dosage and mode are most effective? (continued)

Variable Name	Description/Source	Survey Question	Variable Creation
EDUCATION	Four-level categorical variable indicating whether the adult participant has less than a high school education, is a high school graduate, has some college education, or has a college degree. Source: Participant Surveys.	What is the highest year or grade you finished in school?	Created four-level categorical variable: 1 = responses 1-2 (less than high school); 2 = responses 3-4 (high school graduate); 3 = responses 5-6 (some college education); 4 = responses 7-8 (college degree)
LANGUAGE3	Three-level categorical variable indicating language(s) spoken at home: English only or English and Spanish, Spanish only, or other languages. Source: Participant Surveys.	What language(s) do you speak at home?	Created three-level categorical variable: Respondents indicating they spoke only English or English and Spanish were assigned to "English." Respondents indicating they spoke only Spanish were assigned to "Spanish Only." Respondents indicating they spoke Spanish and other, or English and other, or spoke other language only were assigned to "Other."
SINGLEHH	Dichotomous variable indicating whether a single-adult household. Source: Participant Surveys.	How many people live in your household right now? Respondent entered number of people by age category.	Created binary variable: 1 = entered "1" for number of adults 18 years or older (include yourself); 0 = entered number > 1

(continued)

Exhibit M-1. RQ1f—How much of these changes can be attributed to WIC nutrition education?, RQ3c—How does the impact of WIC nutrition education vary by dosage and duration?, RQ4—What dosage and mode are most effective? (continued)

Variable Name	Description/Source	Survey Question	Variable Creation
FOOD_SECURITY	Dichotomous variable indicating whether the participant’s household is food insecure. Source: Participant Surveys.	Was this true for your household in the past 12 months? (a) We worried whether our food would run out before we got money to buy more (b) The food that we bought just didn’t last, and we didn’t have money to get more. Response options: never true, sometimes true, often true	Created binary variable: 1 = food insecure (answered sometimes or often true to either item), 0 = not food insecure (Hager et al., 2010)
WIC_YEARS4	Four-level categorical variable indicating whether the participant/child has been on WIC for less than 30 days, 1 month to a year, 1 to 2 years, or 3 or more years. Source: Participant Surveys.	Add up all the time you or your children have ever been on WIC. Has it been ...?	Created four-level categorical variable: 1 = response 1 (less than 30 days); 2 = response 2 (1 month to a year); 3 = response 3 (1 to 2 years); 4 = responses 4-5 (3 or more years)
FA_CURRENT_FOOD	Dichotomous variable indicting whether the participant is currently participating in other food assistance programs. Source: Participant Surveys.	Which do you receive now?	Created binary variable: 1 = SNAP or food bank; otherwise = 0

Exhibit M-2. RQ2—Are there particular combinations of features of WIC nutrition education that are more effective than other combinations in achieving improvements in readiness to (a) eat a healthy diet, (b) feed the child participant a healthy diet, and (c) improve physical activity habits?

Variable Name	Description/Source	Survey Question	Variable Creation
FU	Count variable (0–6) that indicates the number of different types of follow-ups reported by the participant. Source: Participant Surveys.	In the past 6 months, in between WIC visits, what did you get from WIC with information on health or healthy eating? Response options: Personal phone call; Text message; Email message; Online education that I could log into from home or someplace else; Invitation or link to Facebook, Twitter, or other social media site; Brochure or handout in the mail; None of the above	Created continuous variable equal to the number of items selected, assigned value of 0 if “none of the above” was selected
VENA	Binary variable indicating the use of participant-centered practices. Source: Participant Surveys.	Which <u>best</u> describes your most recent one-on-one time with a WIC staff person?	Created binary variable: 1 = “I chose what we talked about” or “The WIC staff person and I together chose what we talked about”; 0 = other responses
GOAL	Binary variable indicating whether goals were set. Source: Participant Surveys.	A health goal means trying to become healthier by changing something you do. Which <u>best</u> describes your most recent one-on-one time with a WIC staff person?	Created binary variable: 1 = “S/he worked with me to set health goals for me or my child”; 0 = other responses
COMSI	Continuous measure of communication style (1–12). Source: Participant Surveys.	For each statement, how much do you agree or disagree about your most recent one-on-one time with a WIC staff person? (a) The WIC staff person talked most of the time (b) The WIC staff person listened to me and understood my concerns (c) The WIC staff person followed up on issues or questions from my last one-on-one visit. Response options: (1) Disagree a lot, (2) Disagree a little, (3) Agree a little, (4) Agree a lot	Created continuous variable by summing response to items a (reverse coded), b, and c. The respondent had to answer all three items, otherwise assigned a value of missing.
VID	Binary variable indicating whether participants reported the use of a video or DVD during their education session. Source: Participant Surveys.	At your most recent WIC visit, did the WIC staff show you any of the following or use any of these with you while they talked about health or healthy eating?	Created binary variable: assigned a value of 1 if the respondent selected “video/DVD”; otherwise assigned a value of 0

Exhibit M-3. RQ3a—How does the impact of nutrition education vary by nutrition educator characteristics?

Variable Name	Description/Source	Survey Question	Variable Creation
YEAR	Continuous variable indicating the mean number of years of experience providing WIC nutrition education at the site level. Source: Nutrition Educator Survey.	During your time working for WIC, how many years have you provided nutrition education as part of your job? (Question 30)	For each educator, created continuous variable by assigning the midpoint to the range for each response option (.75, 2, 5, 8.5, 15.5, 21). Then, used educator-level data to calculate a mean value for each of the six sites.
AGEST	Continuous variable representing the average age of the site staff (i.e., nutrition educators). Source: Nutrition Educator Survey.	What is your age? (Question 33)	For each educator, created continuous variable by assigning the midpoint to the range for each response option (24, 29.5, 39.5, 49.5, 55). Then, used educator-level data to calculate a mean value for each of the six sites.
VTRN	Continuous variable for the percentage of staff who have received training in VENA skills, participant-/learner-centered education, motivational interviewing, or emotion-based counseling in the past 12 months. Source: Nutrition Educator Survey.	Select "Yes" or "No" to indicate if you received training on the topic during the past 12 months. (Question 6)	For each educator, created binary variable: 1 = selected "Yes" for VENA skills, participant-/learner-centered education, motivational interviewing, or emotion-based counseling; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.
EDU	Continuous variable for the percentage of nutrition education staff who have a bachelor's or graduate degree. Source: Nutrition Educator Survey.	What is the highest degree you have completed? (Question 31)	For each educator, created binary variable: 1 = bachelor's or graduate degree; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.
CRED	Continuous variable for the percentage of nutrition education staff who are an RD or an LD/LN. Source: Nutrition Educator Survey.	Which, if any, of the following credentials do you have? (Question 32)	For each educator, created binary variable: 1 = RD or LD/LN; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.

Exhibit M-4. RQ3b—How does the impact of nutrition education vary by agency characteristics?

Variable Name	Description/Source	Survey Question	Variable Creation
CSLD	Continuous variable represents the caseload (average number of food packages issued) for the site. Source: POC interviews.	On average, how many participants are served at your site each month? (Question 2)	Continuous variable (site-level)
RATIO	Continuous variable representing the nutrition educator full-time equivalent (FTE)-to-client ratio. Source: POC interviews.	For each job classification/type of staff, enter the number of staff who currently provide nutrition education at the site who work full time and the number who work part time. (Enter NA for any staff type that is not applicable at the site. If a staff member works 32 or more hours/week on WIC, count them in the full-time staff column and if fewer than 32 hours/week on WIC, count them in the part-time staff column appropriate for the number of hours they work per week. If a staff member performs more than one role, count them only once in the job classification/type for their primary role.)	Calculated number of FTEs using information on number of staff, then, divided by caseload (CSLD) to calculate FTE-to-client ratio (site level)

Exhibit M-5. RQ3d—How does the impact of nutrition education vary by participant characteristics?

Variable Name	Description/Source	Survey Question	Variable Creation
AGE	Continuous variable representing the adult participant’s age (years). Source: Enrollment Screener Questionnaire.	Month, day, and year of birth	Calculated age (years) based on birthdate
HLTH_STATUS	Dichotomous variable indicating whether the caregiver’s child has health concerns that may make them high risk. Source: Participant Surveys.	In the past 6 months, have you been told by your doctor or other health care professional that you/your child: Caregiver with child: a. Was a preemie or premature as a baby b. Needs special infant formula c. Is low weight d. Is overweight e. Has high blood lead	Created binary variable: 1 = answered “yes” to 1 or more conditions; otherwise = 0

(continued)

Exhibit M-5. RQ3d—How does the impact of nutrition education vary by participant characteristics? (continued)

Variable Name	Description/Source	Survey Question	Variable Creation
RACE4	A four-level categorical variable indicating whether the adult participant is Hispanic, White, non-Hispanic, Black, non-Hispanic, or Other. Source: Participant Surveys.	Are you Hispanic or Latino? What is your race? (multiple responses allowed)	Responses to the two questions were combined to create a four-level categorical variable. Respondents indicating they were Hispanic or Latino were given priority over other race and ethnicity designations and assigned to "Hispanic." Respondents indicating they were not Hispanic and only selected Black or African-American as their race were assigned to "Black, non-Hispanic." Respondents indicating they were not Hispanic and only selected White or Caucasian as their race were assigned to "White, non-Hispanic" and is the reference group for the analysis. Respondents indicating they were American Indian or Alaska Native, Asian or Native Hawaiian, or who selected more than one race were assigned to "Other."
EDUCATION	Four-level categorical variable indicating whether the adult participant has less than a high school education, is a high school graduate, has some college education, or has a college degree. Source: Participant Surveys.	What is the highest year or grade you finished in school?	Created four-level categorical variable: 1 = responses 1-2 (less than high school); 2 = responses 3-4 (high school graduate); 3 = responses 5-6 (some college education); 4 = responses 7-8 (college degree)
LANGUAGE3	Three-level categorical variable indicating languages spoken at home: English only or English and Spanish, Spanish only, or other languages. Source: Participant Surveys.	What language(s) do you speak at home?	Created three-level categorical variable: Respondents indicating they spoke only English or English and Spanish were assigned to "English." Respondents indicating they spoke only Spanish were assigned to "Spanish Only." Respondents indicating they spoke Spanish and other, or English and other, or spoke other language only were assigned to "Other."

(continued)

Exhibit M-5. RQ3d—How does the impact of nutrition education vary by participant characteristics? (continued)

Variable Name	Description/Source	Survey Question	Variable Creation
SINGLEHH	Dichotomous variable indicating whether a single-adult household. Source: Participant Surveys.	How many people live in your household right now? Respondent entered number of people by age category.	Created binary variable: 1 = entered "1" for number of adults 18 years or older (include yourself); 0 = entered number > 1
FOOD_SECURITY	Dichotomous variable indicating whether the participant's household is food insecure. Source: Participant Surveys.	Was this true for your household in the past 12 months? (a) We worried whether our food would run out before we got money to buy more (b) The food that we bought just didn't last, and we didn't have money to get more. Response options: never true, sometimes true, often true	Created binary variable: 1 = food insecure (answered sometimes or often true to either item), 0 = not food insecure
FA_CURRENT_FOOD	Dichotomous variable indicating whether the participant is currently participating in other food assistance programs. Source: Participant Surveys.	Which do you receive now?	Created binary variable: 1 = SNAP or food bank; otherwise = 0
WICHH	Continuous variable representing the number of people in the household on WIC. Source: Participant Surveys.	How many people in your household are on WIC right now? Please include yourself.	Continuous variable

Exhibit M-6. RQ5—What attributes of individual nutrition education sessions are most effective in helping participants improve their dietary habits, physical activity habits, and other food-related behaviors?

Variable Name	Description/Source	Survey Question	Variable Creation
GROUP	Dichotomous variable indicating whether the site uses group sessions for 11% or more of participants. Source: POC Interviews.	During (asked for each visit type), how often does the site use group sessions to provide nutrition education? Responses: never, rarely (<10%), occasionally (11–39%), sometimes (40–59%), often (60–89%), almost always (≥90%)	1 = used group sessions sometimes, often, or almost always for any type of visit; otherwise = 0 (site level)
ONLINE	Dichotomous variable indicating whether the site uses technology-based education for 40% or more of participants. Source: POC Interviews.	During (asked for each visit type), how often does the site use technology-based offsite to provide nutrition education? Responses: never, rarely (<10%), occasionally (11–39%), sometimes (40–59%), often (60–89%), almost always (≥90%)	1 = used technology-based offsite sometimes, often, or almost always for any type of visit; otherwise = 0 (site level)
OBX	Continuous variable created using observation data to describe the use of VENA/participant-centered practices during one-on-one sessions. This variable is measured at the site level. Source: Observations of one-on-one sessions.	Attributes coded as observed: participants spoke 40% or more of the time, educator used open-ended questions frequently, educator provided general or specific affirmations; participant’s needs and interests determined focus of discussion	For each site, summed the percentage of observations of one-on-one sessions in which each attribute was observed then divided by four (0–100)

Exhibit M-7. RQ6a—What attributes of group nutrition education sessions are most effective in helping WIC participants improve their dietary habits, physical activity habits, and other food-related behaviors?

Variable Name	Description/Source	Survey Question	Variable Creation
VENAG	Dichotomous variable indicating the use of participant-centered practices. Source: Participant Surveys.	Which <u>best</u> describes your most recent WIC group session? Responses: (1) S/he mostly talked and would stop to ask if we had questions, (2) We watched a video/DVD and at the end s/he asked if we had questions, (3) S/he shared information and we had a discussion. S/he asked me and the other people in the group about our thoughts and opinions.	Created binary variable: 1 = response option #3; 0 = other responses
GOALG	Dichotomous variable indicating whether goals were set. Source: Participant Surveys.	A health goal means trying to become healthier by changing something you do. Which <u>best</u> describes your group session with a WIC staff person?	Created binary variable: 1 = "S/he worked with me to set health goals for me or my child"; 0 = other responses
COMSG	Continuous measure of communication style (1-8). This measure is constructed using two items that asked participants about the type of communication they experienced during their group session. Source: Participant Surveys.	For each statement, how much do you agree or disagree about your most recent WIC group session? (a) The WIC staff person listened to the group and understood our concerns (b) I had a chance to bring up topics that were important to me. Response options: (1) Disagree a lot, (2) Disagree a little, (3) Agree a little, (4) Agree a lot	Created continuous variable by summing response to items a and b. The respondent had to answer both items, otherwise assigned a value of missing.

Exhibit M-8. RQ6b—What skills and attributes of the nutrition educator are most effective in helping WIC participants of group nutrition education sessions improve their dietary habits, physical activity habits, and other food-related behaviors?

Variable Name	Description/Source	Survey Question	Variable Creation
VTRN	Continuous variable for the percentage of staff who have received training in VENA skills, participant-/learner-centered education, motivational interviewing, or emotion-based counseling in the past 12 months. Source: Nutrition Educator Surveys.	Select "Yes" or "No" to indicate if you received training on the topic during the past 12 months. (Question 6)	For each educator, created binary variable: 1 = selected "Yes" for VENA skills, participant-/learner-centered education, motivational interviewing, or emotion-based counseling; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.
GRPTRN	Continuous variable representing the percentage of staff who have received training in providing group facilitation in the past 12 months. Source: Nutrition Educator Survey.	Select "Yes" or "No" to indicate if you received training on the topic during the past 12 months. (Question 6)	For each educator, created binary variable: 1 = selected "Yes" for group facilitation; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.
AGEST	Continuous variable representing the average age of the site staff. Source: Nutrition Educator Survey.	What is your age? (Question 33)	For each educator, created continuous variable by assigning the midpoint to the range for each response option (24, 29.5, 39.5, 49.5, 55). Then, used educator-level data to calculate a mean value for each of the six sites.
YEAR	Continuous variable indicating the mean number of years of experience providing WIC nutrition education at the site level. Source: Nutrition Educator Survey.	During your time working for WIC, how many years have you provided nutrition education as part of your job? (Question 30)	For each educator, created continuous variable by assigning the midpoint to the range for each response option (.75, 2, 5, 8.5, 15.5, 21). Then, used educator-level data to calculate a mean value for each of the six sites.
EDU	Continuous variable for the percentage of staff who have a bachelor's or graduate degree. Source: Nutrition Educator Survey.	What is the highest degree you have completed? (Question 31)	For each educator, created binary variable: 1 = bachelor's or graduate degree; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.
CRED	Continuous variable for the percentage of staff who are an RD or an LD/LN. Source: Nutrition Educator Survey.	Which, if any, of the following credentials do you have? (Question 32)	For each educator, created binary variable: 1 = RD or LD/LN; otherwise = 0. Then, calculated a percentage for each of the six sites, with the percentage equal to the percentage of "1" responses.

Exhibit M-9. RQ6c—What types and dosage of reinforcers are most effective in helping participants improve their dietary habits, physical activity habits, and other food-related behaviors? (Note: Information on dosage not available, so used number of different types of reinforcers)

Variable Name	Description/Source	Survey Question	Variable Creation
REINFORCE	Count variable (0–7) that indicates the number of different types of reinforcers reported by the participant. Source: Participant Surveys.	At your most recent WIC visit, did the WIC staff show you any of the following or use any of these with you while they talked about health or healthy eating? Response options: Personal phone call; Text message; Email message; Online education that I could log into from home or someplace else; Invitation or link to Facebook, Twitter, or other social media site; Brochure or handout in the mail; None of the above	Created continuous variable equal to the number of items selected, assigned value of 0 if “none of the above” was selected
VID	Use of video/DVD as a reinforcer. Source: Participant Surveys.	Same as REINFORCE	Created binary variable: 1 = selected “Video/DVD”; 0 = did not select this response
BBOARD	Use of bulletin boards as a reinforcer. Source: Participant Surveys.	Same as REINFORCE	Created binary variable: 1 = selected “Bulletin boards”; 0 = did not select this response
BROC	Use of brochures as a reinforcer. Source: Participant Surveys.	Same as REINFORCE	Created binary variable: 1 = selected “Brochures”; 0 = did not select this response
INTX	Use of interactive tool as a reinforcer. Source: Participant Surveys.	Same as REINFORCE	Created binary variable: 1 = selected “tasting/cooking demonstration,” “activity/game;” or “item to pass”; 0 = did not select these responses

Exhibit M-10. RQ7—What other characteristics of WIC nutrition education delivery are most effective in helping WIC participants improve their dietary habits, physical activity habits, and other food-related behaviors?

Variable Name	Description/Source	Survey Question	Variable Creation
HELP	Binary variable that indicates whether the participant believes the education session was helpful. Source: Participant Surveys.	Some people say that some WIC visits are more helpful than others. Which best describes the information you received at your most recent WIC visit?	Created binary variable: 1 = "The information was helpful because it was new to me" or "The information was helpful. I knew the information, but it was good to hear it again."; 0 = other responses

Exhibit M-11. RQ8—What experiences with WIC nutrition education are most often cited as motivating WIC participants to change their diet, their children’s dietary habits, physical activity habits, readiness to change behaviors, and other food-related behaviors?

Variable Name	Description/Source	Survey Question	Variable Creation
REASNS	Continuous variable (1–4) that measures participants’ level of agreement (agree-disagree) with whether they believe that they learned about good reasons to eat healthfully. Source: Participant Surveys.	For your most recent WIC visit, how much do you agree or disagree with each statement? I learned good reasons to eat healthy	Created continuous variable: 1 = disagree a lot, 2 = disagree a little, 3 = agree a little, 4 = agree a lot
WAYS	Continuous variable (1–4) that measures participants’ level of agreement (agree-disagree) with whether they believe that they learned about good ways to eat healthfully. Source: Participant Surveys.	For your most recent WIC visit, how much do you agree or disagree with each statement? I learned good ways to eat healthy	Created continuous variable: 1 = disagree a lot, 2 = disagree a little, 3 = agree a little, 4 = agree a lot
CHANGE	4-level categorical variable indicating the participant’s level of interest in making a change related to the health variable. Reference group is already doing it. Separate variables were created for each health variable. Source: Participant Surveys.	Have you made or do you think you will make a change to your/your child’s eating or activities since discussing this topic? Responses: I am NOT thinking about doing it, I am thinking about doing it, I am planning on doing it, I am already doing it	1= Not thinking about doing it, 2 = Thinking about doing it, 3 = Planning on doing it, 4 = already doing it

Exhibit M-12. RQ9—How does the content of WIC nutrition education affect participant’s dietary habits, physical activity habits, readiness to change behaviors, and other food-related behaviors?

Variable Name	Description/Source	Survey Question	Variable Creation
TALK	Dichotomous variable that indicates whether the participant reported discussing the health domain during the past 6 months. Source: Participant Surveys.	In the past 6 months, which topics did you discuss in WIC one-on-one or group sessions or watch in videos/DVDs or Web sites?	1 = talked about topic; 0 = did not talk about topic

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APPENDIX N

MEMO SUMMARIZING AUGUST 2017 ADVISORY PANEL

MEETING ON IMPLICATIONS OF PILOT STUDY FINDINGS FOR

FUTURE EVALUATIONS

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TO: Karen Castellanos-Brown

FROM: WIC NE Study Team

DATE: October 2, 2017

SUBJECT: **WIC Nutrition Education Study**
Deliverable 1.4—Summary of August 23, 2017, Advisory Panel Meeting
(Revised)

This memo provides a summary of the final meeting held with the Advisory Panel for the WIC Nutrition Education Study and additional email correspondence provided after the meeting from several Advisory Panel members. The meeting was held at the Food and Nutrition Service's (FNS's) offices on August 23, 2017. The purpose of the meeting was to present the methods, results, lessons learned, and implications of the Phase II pilot study and to obtain feedback from the Advisory Panel on the design for a large scale or national evaluation of WIC nutrition education. Appendix A provides a list of meeting attendees.

First, we present the key take-aways from the meeting, followed by a more detailed summary of the meeting organized by the meeting agenda. The first part of the meeting included PowerPoint presentations by RTI and Altarum, which provided an overview of the study and the results of the process and impact evaluations (including Q&A). The second part of the meeting was a structured discussion moderated by Jon Blitstein (RTI) and Lorrene Ritchie (Nutrition Policy Institute, University of California) to obtain feedback from the Advisory Panel members on the design for a national evaluation of WIC nutrition education.

KEY TAKEAWAYS

- FNS needs to determine the key research questions to address in a national evaluation of WIC nutrition education (it was noted that a good study addresses a relatively small number of research questions).
- Consideration needs to be given to the primary outcome; possible outcomes include dietary intake, biomarkers, body mass index (BMI), and the Healthy Eating Index.
- The panelists identified several challenges to conducting an evaluation of WIC nutrition education that is nationally representative, thus, consideration should be given to alternative designs. These challenges include:
 - lack of a control group because WIC nutrition education cannot be withheld
 - considerable site-level variation in how nutrition education is delivered

- nutrition education is individualized; this heterogeneity makes it difficult to evaluate even at the site-level
- Focus more on the quality (e.g., extent to which participant centered) of nutrition education than on the quantity of nutrition education (exposure).
- Alternatives to the dose-response design used for the pilot should be considered; possible approaches include regression discontinuity, positive-deviance approach (to differentiate the more effective from the less effective programs), and a longitudinal study design to follow participants who are receiving WIC benefits for the first time for a longer period.
- Nutrition educators (the deliverers of the message) play an important role and should be addressed in a national evaluation study.
- Modes of follow-up nutrition education vary considerably so the quality of the different modes needs to be assessed. In particular, technology-based education is being used increasingly; thus, further investigation as to its effectiveness is needed.
- Approaches that use real-time electronic data collection and do not rely on participant recall on the exposure and quality of nutrition education are needed to capture accurate information.
- Participant Surveys should limit the number of outcomes and use validated scales instead of single items.
- The pilot study generated information that may be useful to the WIC Program Office to inform nutrition education guidance which will be summarized in the final report and briefing.

PRESENTATIONS BY STUDY TEAM AND Q&A

Study Overview

Following opening remarks from Karen Castellanos-Brown, the FNS Contracting Officer's Representative (COR) for the WIC Nutrition Education Study, Sheri Cates (RTI Project Director) provided a brief overview of the objectives of the meeting, a summary of Phase I, and the purpose of the Phase II process and impact evaluations.

There was a brief discussion about what the focus of a national evaluation of WIC should be in the current political era. Melissa Abelev, Assistant Deputy Administrator, responded that FNS wants to know if WIC is effective: how does WIC nutrition education translate into healthy eating given the monetary investment made by WIC in providing participants with healthy food? She noted that there are 20,000 different WIC sites, so WIC is being delivered a lot of different ways. FNS wants to know answers to questions such as, do we know if WIC nutrition education is working, what about it is working, and which models work? Other considerations as suggested

by the Advisory Panel members are the cost-effectiveness of WIC nutrition education and what features of WIC nutrition education are effective.

Summary of Results and Lessons Learned from the Pilot Process Evaluation

Linnea Sallack (Altarum Project Director) and Karen Deehy (Altarum Task Leader) provided a summary of the methods, results, and lessons learned from the pilot process evaluation.

Comments/feedback on the process evaluation that have implications for designing a national evaluation are summarized below:

- Interest by FNS in comparing one-on-one sessions with technology-based education
- Interest by FNS in staff training and how it influences delivery of nutrition education (limitations of pilot study were discussed)
- Whether information on outcomes (e.g., weight, height) was collected from administrative data (was not collected for pilot)
- How to balance the amount of time spent at the WIC site with offering a high-quality experience
- Interest in text messaging as a tool, and whether the site considered texting to be an interactive teaching tool or a reinforcer (for the pilot sites, text messaging was used only for appointment reminders)
- It was noted that a USDA-funded study conducted by Shannon Whaley, Lorrene Ritchie, and colleagues compared the effectiveness of group vs. technology-based education and found comparable changes in both groups for improvements in knowledge and behavior

Summary of Results and Lessons Learned from the Pilot Impact Evaluation

Jon Blitstein (RTI Analysis Task Leader) provided a summary of the methods, results, and lessons learned from the pilot impact evaluation. Comments/feedback on the impact evaluation that have implications for designing a national evaluation are summarized below:

- Important to note the distinction between time spent on nutrition education and total time at the site; participants may have not accurately made the distinction when completing the survey
- Question about whether the small sample size for the latent class analysis affected the results; Jon responded that there was no indication that sample size or multicollinearity were an issue

- Question on whether the analysis considered prior exposure to WIC nutrition education; Jon responded that length of time on WIC was used as a covariate in the models
- For self-efficacy measures, a 3-point scale was used for the pilot; Jon suggested that for analysis purposes more levels would be useful, but Tom countered that based on previous research most lower-income respondents do not respond using the full scale, so a 3-point scale is acceptable
- Noted that for the pilot, all participants were included in the impact evaluation models regardless of whether they had received nutrition education on the topic because of the small sample size; for a national evaluation, which would have a larger sample size, this concern could be addressed by stratifying (i.e., whether participants had exposure to the topic or not) or using an interaction term in the models
- Small number of pilot sites was a limiting factor for detecting any significant differences in the site-level models
- Acknowledgement that a pilot, by its nature, is not to make inferences but rather to test methods, get better estimates on outcome measures to use for power calculations for a more rigorous future evaluation, and examine trends to support a future evaluation with an adequate sample size.

DISCUSSION ON THE DESIGN OF A LARGE SCALE OR NATIONAL EVALUATION OF WIC NUTRITION EDUCATION

Objectives and Research Questions

- A good evaluation should address a relatively small number of research questions; the pilot had 15. What is the biggest priority?
 - FNS:
 - “We put together these research questions because in some situations we need to answer all of them.”
 - “We want to know what we can say about WIC nutrition education because we’re spending millions of dollars on it.”
 - In a follow-up email, a panelist recommended that FNS initiate a planning phase that clarifies exactly what are the research questions and that the study is designed to align with these questions
 - FNS identified the following as key outcomes:
 - Obesity
 - Birth outcomes
 - FNS noted that proxy measures such as whole grain consumption, fruit and vegetable (FV) consumption, breastfeeding could also be considered. A panelist

noted that based on a systematic review for adults there is no relationship between FV consumption and obesity, although FVs offer other health benefits.

- Other outcomes suggested by the Advisory Panel and FNS:
 - Patterns of behavior such as dietary behaviors and feeding practices (e.g., timing of introduction of complementary foods) (the pilot collected information on these behaviors but this information was not presented during the meeting)
 - Self-efficacy (e.g., using multiple questions to create a scale for self-efficacy to consume/serve more fruit or vegetables instead of relying on one question as was done for the pilot); there were concerns about this approach because although the participant may feel she can do something, it does not mean she is doing it
 - Healthy Eating Index (HEI) or another measure of overall diet quality (using the HEI would require 24-hour dietary recalls and the use of 24-hour dietary recalls was discouraged by a panelist in a follow-up email)
 - Biomarkers (e.g., iron levels, anemia, infra-red measure of tissue vitamin A status as partial indicator of vegetable intake [may not be practical for a WIC study])
 - How feeding, eating, and physical activity behaviors compare to recommendations (e.g., American Academy of Pediatrics)
 - Maternal BMI and child growth (suggested by a panelist in a follow-up email)
 - Food package redemption data
 - Participant satisfaction (In a follow-up email, a panelist noted that in a study of school-age children curriculum satisfaction was a good predictor of the outcome)
 - In a follow-up email, a panelist suggested creating an index to measure the dietary/physical activity outcomes of WIC nutrition education using the behaviors that WIC emphasizes and that tend to be more frequently covered in WIC nutrition education
- Challenge of disentangling WIC food package and nutrition education; because it is not possible to withhold food package benefits or nutrition education the best we can do is to understand the impact of nutrition education in the presence of WIC food package benefits
- Challenge of conducting a nationally representative evaluation of WIC nutrition:
 - Traditionally, a national evaluation implies that the intervention is being delivered consistently, e.g. consistent messages and modes, which is not the case with WIC nutrition education; thus, consideration should be given as to whether it would be

- more appropriate to conduct a series of smaller, well-designed observational studies across the country examining specific aspects of nutrition education
- This approach may help capture or quantify the powerful aspects of WIC nutrition education; this approach could also be used to assess the quality of nutrition education (i.e., use of participant-centered practices)
 - Positive deviance approach at the site level:
 - Examine approaches that are working and those that are not and analyze to understand these differences
 - Identify which sites have positive improvements in outcomes (e.g., BMI, birthweight, and breastfeeding measures) versus sites that do not and then compare what these two groups are doing that is different with respect to nutrition education; this approach would provide information on the features of nutrition education that are effective for improving the outcomes of interest
 - In a follow-up email, a panelist suggested an evaluation approach that examined the relative effectiveness of alternative implementation strategies for WIC nutrition education; this approach could include outcome and process variables, and how varying nutritional strategies related to changes in participant outcomes. Using a Propensity Score Matching to reduce extraneous factors that may have influenced findings was also suggested.
 - Information that would be useful to WIC Program suggests that examination of impact of nutrition education on participants' behavior alone may miss important factors:
 - Educator-level differences
 - Content of messages and which educator delivered the messages needs to be tied to nutrition education
 - Training of nutrition educators
 - Would be difficult to tie specific educators to participant outcomes
 - Interest in using findings from the evaluation study to inform WIC nutrition education guidance, which is currently being updated
 - Given interest in technology-based education, could use information on the “do’s” and “don’ts” of nutrition education (e.g., individualize the content and focus less on the negative and more on the positive) to develop “best practices” for delivering technology-based education and the materials (e.g., Web site or app), such an approach would need to go beyond increasing knowledge and motivate behavior change; developing these tools may help improve nutrition education guidance but will not help assess the impact of WIC nutrition education on participant behaviors

Study Populations

- Alternative to a cross-sectional exposure/response design is to enroll participants who are receiving WIC benefits for the first time and follow them longitudinally to assess the impact of WIC nutrition education
- Possible approaches to address lack of a control group:
 - Identify women/children who are eligible for WIC but not participating in WIC; concern with this approach is that families that are eligible but choose not to participate are systematically different from WIC participants
 - Use regression discontinuity approach by comparing people who barely qualify for WIC with those who barely do not qualify; concerns with this approach are how to identify denied applicants; also, participants who are at very highest income to be eligible for WIC are different from those at very lowest income so findings may not be applicable to all WIC participants
 - Use participants who drop out of WIC as control when these participants can be identified, e.g. when WIC MIS identifies why the person dropped out; again, those who drop out of WIC are likely different than those who stay on WIC
- Considerations for the target population:
 - Consider focusing on where nutrition educators think WIC nutrition education is making the most impact (e.g., families with multiple children, families that recently had a child)
 - Consider focusing on new parents who are enrolled in WIC for the first time (prenatal moms); might be the cleanest to evaluate and WIC has an opportunity to influence behaviors; may be challenging to recruit (for pilot study, only 23% of postpartum women were receiving WIC for first time)
 - Concern with limiting focus to enrolling pregnant women because there are a limited number of pregnant women enrolled in WIC; thus, it would be difficult to recruit enough participants
 - In a follow-up email, a panelist suggested studies of subgroups (e.g., women who are pregnant, mothers of newborns, mothers of infants up to 6 months old, mothers of infants up to 12 months old, mothers of children up to age 2, and mothers of children aged 2 to 5)
 - In a follow-up email, a panelist acknowledged the challenge of recruiting women without prior WIC experience and suggested limiting to or over-recruiting the most vulnerable women (e.g., underweight/overweight) because this is where one would expect the greatest impact

Measures and Data Collection Methods

- The feedback provided by some FNS representatives seemed to suggest that there was less interest in evaluating WIC+ (e.g., comparing WIC nutrition as delivered to an

- enhanced delivery of WIC NE in a randomized control trial (RCT), and that there was more interest in evaluating WIC NE as naturally delivered and addressing site-level variation
- Because WIC nutrition education is personalized to the individual, want to know whether participants made a change based on the goal(s) set for their family
 - Use outcomes available in administrative data (to determine sites that are doing well versus sites that are not doing well):
 - Weight
 - Birth weight of infant
 - BMI
 - Breastfeeding status
 - Food package redemption
 - Site-level data: important to collect information on the following:
 - Self-evaluation of nutrition educators on qualifications and training
 - Resources spent on training (although such information may be difficult to collect)
 - Approaches for collecting accurate information on exposure:
 - Provide tablet at WIC site to collect information from participants in real time (could also be used to collect information on participant satisfaction)
 - Provide incentive to site staff to collect additional administrative data or use a research study site liaison to collect additional administrative data
 - Suggested survey items/questions for participant surveys:
 - Use validated scales (multiple items) to measure constructs
 - Better to measure fewer outcomes in a more psychometrically strong approach than many outcomes using fewer questions per outcome
 - Use questions tied to specific education received by participants (e.g., feeding behaviors, forthcoming family scale developed by Dr. Baranowski], validated questions by Townsend for EFNEP program
 - Questions on what goals were set and whether there was follow-up (i.e., continuity of care) (it was noted that if the site requires setting a goal, then the approach may not be participant-centered if the educator assigns a goal when the participant does not want to set one or can't think of a goal)
 - Question on repetitiveness (hearing the message multiple times)

WRAP UP

- In response to question on whether data collected from the pilot could be used in ways that have not already been addressed, it was suggested that an important next step would be to publish the pilot results in a peer-reviewed journal, and this would be useful even at a descriptive level (e.g., the observation data).
- Another consideration would be to bring together a larger group to discuss the design for a national evaluation.

APPENDIX A: MEETING ATTENDEES

USDA/FNS/OPS

- Karen Castellanos-Brown
- Melissa Abelev
- Danielle Berman
- Anthony “Tony” Panzera
- Kelley Scanlon

USDA/FNS/WIC

- Anne Bartholomew
- Paseasie Adedze
- Melanie Haake
- Marta Kealey
- Terra (Olivia) Newman
- Valery Soto

Advisory Panelists

- Tom Baranowski, Baylor College of Medicine
- Maureen Black, University of Maryland, School of Medicine and RTI (participated via phone)
- Isobel Contento, Columbia University, Teachers College
- Jacqueline Marlette-Boras, Maryland WIC Program (retired) (participated via phone for first 2 hours of meeting)
- Margaret Saunders, Community and Economic Development Association of Cook County (was unable to participate because of illness)

RTI/Altarum Project Team

- Sheri Cates, RTI International
- Jon Blitstein, RTI International
- Linnea Sallack, Altarum Institute
- Karen Deehy, Altarum Institute
- Rebecca Harnik, Altarum Institute
- Diane Woloshin, Altarum Institute
- Lorrene Ritchie, Nutrition Policy Institute, University of California
- Nile Rosen, Informing Change (participated via phone)
- Shannon Whaley, PHFE WIC, consultant (participated via phone)