



Appendix A: WIC Participant Online Technology Survey Report

Executive Summary	3
Methodology	7
Participant Recruitment	8
Sample Demographics	9
Data Analysis	13
WIC Online Survey Respondent Demographics by State	16
Cell Phone Use, Text Messaging & Smartphone Apps	20
Devices Used for Technology	22
Social Media & Communication Technology Use	25
Interest in Using Social Media to Connect with Other WIC Moms	28
Connecting with WIC: Current & Future WIC Services	33
Ranking of Technologies Based on the Online Participant Survey	52
WIC Millennials Report Higher Rates of Smartphone Ownership and Facebook Use than the General Population of Millennials	53
Conclusions	55
Appendix A-1 WIC Participant Online Survey	57
Appendix A-2 WIC Participant Online Survey Recruitment Flyer	73

Executive Summary

The Enhancing WIC Services through Electronic Technologies Project, funded by USDA FNS WR WIC, administered by the Inter-Tribal Council of Arizona (ITCA), was managed by Barbara Longo and Claudia Desmangles (California WIC Program) in coordination with an advisory group representing WIC programs throughout the Western Region. The goal of the project was to develop strategies that would support and enhance WIC services with electronic technologies regardless of the various WIC database systems in the Western Region. To accomplish this goal, the project used a comprehensive, mixed methods approach, including a quantitative online survey and a series of focus groups to: a) identify the use of electronic technologies and social media among current WIC participants and WIC-eligible participants and b) to understand how these individuals want to interact with WIC in the future. The focus groups included three separate categories: current WIC participants identified as early adopters of technology, current WIC participants, and WIC-eligible participants. This report summarizes findings from the online survey of Western Region WIC participants.

The *WIC Participant Online Technology Survey* was available from November 7, 2011 to December 9, 2011. Survey respondents ($N=8,144$) consisted of a convenience sample of WIC participants who were familiar with technology.

Research Questions

1. What are the current technologies frequently used by WIC participants in the Western Region?
2. What types of technology do WIC participants want to use when interacting with the WIC program?
3. In what situations do WIC participants want to use technology to engage with the WIC program?
4. How does the use of technology vary by geographic location within the Western Region?

Key Findings of Current Technology Use

- The top three technologies used were email (92%), text messaging (86%), and Facebook (80%).
- 61% of respondents email daily.
- 57% use instant messaging.
- 83% have never used Twitter.
- 80% have a Facebook profile.

- As age increases Facebook use decreases.
- Respondents who identified themselves as American Indian/Alaskan Natives, those with less than a high school education, as well as those living in Indian Tribal Organizations (ITOs) use Facebook the least.
- Among Facebook users, 74% have liked/commented on a group/business page, 48% have joined a Facebook group, and 31% joined a group chat.
- 92% of respondents own a cell phone, of these 58% own a Smartphone.
- 54% have an unlimited data plan on their phone, 78% have an unlimited text messaging plan.
- 93% who own a cell phone use it to send and receive text messages.
- 31% use Smartphone apps for health information. The most popular app was WebMD mobile.
- When accessing the Internet 51% of respondents reported using a desktop, 23% a cellphone, and 25% reported using both devices equally.
- Beginning at age 25, as age increases, technology is accessed more frequently via computer and less frequently via cell phone.
- Survey respondents are very familiar with technology, for example: 60% use computers to watch videos, 65% play games and download apps, 70% already cancel and schedule appointments online, 92% send and receive email messages.

Current Interactions with WIC

- 75% of respondents currently receive nutrition education via in-person, one-on-one contact with WIC staff.
- Approximately 60% of respondents schedule WIC appointments over the phone or in person.
- 67% of respondents receive appointment reminders by phone, while 25% do not receive appointment reminders of any kind.
- Some agencies are beginning to send appointment reminders via text message or email.
- Navajo Nation (47%) and Alaskan Native (49%) respondents reported taking more online nutrition education classes than other states and ITOs combined (21%).

Connecting with WIC in the Future

- 67% of respondents indicated that appointment reminders via text message would be “very useful,” 64% reported that scheduling WIC appointments online and 63% mentioned that having access to recipes to and cooking demonstration videos featuring WIC foods would be “very useful.”
- More than half of respondents (59%) reported that it would be useful to receive nutrition education via text message or email in the future.
- Among cell phone users, 70% with an unlimited text messaging plan and 72% with an unlimited data plan reported that receiving nutrition education via text message would be “very useful.”
- 46% of respondents want a social media site specifically for WIC participants, while 38% want WIC to use Facebook.

- More than half of respondents (59%) want to receive nutrition education via Internet classes or in-person, one-on-one nutrition education with WIC staff.
- Pregnant, breastfeeding, and respondents with children less than 12 months of age were more likely than respondents with children older than 12 months to indicate that video chat with a breastfeeding educator would be “very useful.”
- More than respondents from any other state or ITO, American Samoa and Guam respondents reported that receiving nutrition education from a nutritionist via video chat would be “very useful.”
- 57% of respondents would join an online WIC group.
- Topics of interest for online WIC groups vary by parental status in WIC. Respondents tend to seek topics that are a step ahead of their child's current stage of development. For example, pregnant women want an online group about breastfeeding and newborns, breastfeeding women and respondents of children less than 12 months want an online group about infants and parenting, respondents of children over 12 months of age want an online group about toddlers, healthy eating, and parenting.
- Only 12% of respondents reported that they want to receive nutrition education via Twitter.
- 60% reported that the mockups of technologies to shop for WIC foods are “very useful.”
- 70% of respondents are “somewhat likely” or “very likely” to participate in a chatroom with other WIC parents.

Technology Use Varies by Geographic Location

- Respondents living on Indian Tribal Organizations use Facebook the least (48% vs 80%).
- Respondents from Guam, Mariana Islands, American Samoa, Navajo Nation, and Nevada reported a higher desire to use video chat for either breastfeeding support or nutrition education compared to other geographic areas within the Western Region.
- Respondents from Navajo Nation (47%) and Alaska (49%) reported currently taking online nutrition education classes, which is higher than the aggregate sample of 21%.
- 76% of respondents from Nevada, 63% from California, and 64% from Oregon reported that they would like to receive nutrition education via the internet, which is higher than the aggregate sample of 59%.

Demographic Characteristics

- Survey respondents reported higher levels of education compared to current and WIC-eligible focus group participants.
- Among survey respondents, Spanish-speakers were less educated than English-speakers.
- 44% of respondents from American Samoa reported having less than a high school education.

Implications of Key Findings

Based on the key findings, WIC programs in the Western Region should consider implementing the use of text messaging and email for appointment reminders and nutrition education. In addition,

Facebook should be explored as a means to provide nutrition education to current WIC participants. Other emerging, newer technologies to be explored include video chat, mobile websites, and Smartphone apps. Participants seem very open to using these technologies. Mobile websites or Smartphone apps, for example, can help participants access WIC services at their convenience and shop for WIC foods. Video chat could be a great option for participants who live in remote areas and often have transportation issues.

Findings also showed that with age, WIC participants continue to use technologies and the devices with which they are most familiar. For example, older WIC participants continue to use the computer more than the cell phone when accessing the Internet. As such, younger WIC participants will likely continue to use the cell phone as they age, while new generations of WIC participants will use the newer, “smarter” technologies that will become more accessible over time. Consequently, it makes sense for WIC to offer multiple modes of nutrition education and breastfeeding support such as: online classes, websites, social media, video chat, and Smartphone apps geared toward younger generations.

Incorporating the use of technology will not eliminate the need to provide one-on-one WIC services. Remote places such as villages in Alaska and ITOs have difficulty accessing the Internet and cellular technology. In addition, there are many participants with limited resources and lower levels of education who do not currently access the Internet. As such, it is imperative that WIC offers multiple options for delivering WIC services.

The Western Region WIC programs will need to decide which technologies make the most sense to implement for each of the services they offer. For example, findings from this research strongly suggest the creation of web-based applications and mobile-based websites that allow participants to access scheduling and appointment services online. In the near future, WIC participants should be able to schedule an appointment online and receive an appointment reminder via their desired method of contact chosen from a menu of options that includes email, text messaging, or a phone call. Online appointment scheduling and the ability to view appointment services online may be more pressing and important to WIC participants at this time than creating nutrition education contacts via email, text messaging, and/or Facebook. A feasibility and cost-benefit analysis will help determine and give direction as to which services should be implemented first.

Methodology

Background

Amanda Hovis & Company, LLC and Limetree Research, LLC conducted the *WIC Participant Online Technology Survey* from November 7, 2011 to December 9, 2011, as part of the Enhancing WIC Services through Electronic Technologies Project, funded by USDA FNS WR WIC, administered by the Inter-Tribal Council of Arizona (ITCA) and managed by Barbara Longo and Claudia Desmangles (California WIC Program) in coordination with an advisory group representing WIC programs throughout the Western Region. This region includes: Alaska, American Samoa, Arizona, California, Commonwealth of the Northern Mariana Islands, Guam, Hawaii, Idaho, Nevada, Oregon, Washington, Intertribal Council of Arizona, Intertribal Council of Nevada, and Navajo Nation.

Purpose

The purpose of this mixed methods study was to better understand technology use of Western Region WIC participants by using both quantitative (broad numeric trends) and qualitative (detailed views of WIC participants and potential WIC participants) data. In this study, the *WIC Participant Online Technology Survey* assessed the technologies used by WIC participants, the technologies currently used to interact with WIC, the situations and types of technologies WIC participants want to use when interacting with WIC in the future, and the likelihood of use of these technologies when interacting with WIC in the future. At the same time, these topics were also explored using focus groups with Western Region WIC participants at WIC clinics throughout the Western Region.

The purpose of the *WIC Participant Online Technology Survey* and the WIC participant focus groups was to:

1. Identify current technology used by WIC participants in the Western Region.
2. Identify types of technology WIC participants currently use when interacting with WIC.
3. Identify the situations in which Western Region WIC participants want to use technology and social media to interact with WIC (e.g., scheduling and appointment services, eligibility information, nutrition education, health linkages and referrals, store locations and authorized foods, WIC agency locations and breastfeeding peer counseling support services).
4. Identify types of technology WIC participants want to use when interacting with WIC.

- Determine the likelihood of use of these technologies when interacting with WIC.

Definitions

In this document, the term *technology* refers to a specific set of technologies of interest to the Western Region WIC program which includes email, Internet, Smartphone applications, text messaging, video chats, gaming activities, and social networking sites such as Facebook and Twitter.

The term *survey respondents* or *respondents* refers to individuals who answered the *WIC Participant Online Technology Survey*.

Development of WIC Participant Online Technology Survey

The online survey was developed by Amanda Hovis & Company, LLC and Limetree Research, LLC from recommendations provided by members of the Western Region WIC Electronic Technologies Advisory Board. The survey was then reviewed by the Western Region WIC Electronic Technologies Steering Committee. The *WIC Participant Online Technology Survey* items were tested for readability and comprehension using cognitive interception interviews of WIC participants at designated WIC clinics that hosted the three focus groups for early adopters of technology. Following the comprehension testing, a usability test was conducted with WIC participants from the volunteer agencies in California and Arizona. During the test phase, survey items were revised as needed.

The final survey contained 43 questions in six categories as shown in Table 1. Most questions were multiple choice, with options for writing in additional information. The survey was offered in both English and Spanish.

Table 1. Description of WIC Participant Online Technology Survey

Question Category	Number of Questions
Demographics	15
Cell phone use	6
Internet use	5
Facebook use	3
Current WIC services	4
Future WIC services	10

Participant Recruitment

Western Region WIC participants accessed the *WIC Participant Online Technology Survey* from November 7, 2011 to December 9, 2011. The survey was available at www.wicsurvey.com and was linked to wichealth.org (used in Alaska, California, Nevada, Washington, and Oregon's)

Internet-based nutrition education system. To encourage participation the survey included a \$100 gift card drawing for participants in each of the Western Region states and territories. All states were provided with a recruitment flyer (see Appendix A-2) to inform participants about the survey. The Western Region held several conference calls to discuss additional recruitment and promotion strategies. Ideas for additional promotion included having a computer available for participants to complete the survey at the clinic, posting web banner advertisements on agency websites, and emailing and/or texting clients directly about the survey.

States with higher participation rates utilized additional recruitment strategies such as having participants complete the survey at the clinic, promoting the survey via a web banner on their website, connecting to web-based nutrition education, and direct emails and/or text messages. States with the highest levels of participation (California and Oregon) also emailed or sent text messages to participants about the survey.

The final sample ($N=8,146$) was comprised of a self-selected convenience sample of individuals who were most likely familiar with Internet technology given that they completed the survey online.

Weighting Data for Appropriate Representation among States and ITOs

In order to achieve a representative sample of the Western Region states, a quota was set for each state, territory and tribal organization of a target number of WIC participants that needed to complete the online survey. When the data collection ended, some states were in excess of the established quota, while others missed their quota and were under represented. In consultation with the Western Region and statisticians from the University of Texas at Austin and University of Alaska at Anchorage it was decided that the data would be weighted based on the WIC population in each of the Western Region states/territories.

This was done by using an 'expected sample size' from the power calculations to estimate a population proportion. The actual survey response numbers were used to create a sample proportion; the population proportion was divided by the sample proportion to obtain a weight.

The weight was an added variable for each individual respondent. For example, the expected sample size from the Navajo Nation was thirty respondents, yet the actual sample contained only five. Therefore, each respondent from the Navajo Nation was weighted 'up' by ~ 10.745 . Additionally, we expected 2,700 Californians to complete the survey, yet 6,077 completed the survey. Therefore, each California respondent was weighted 'down' by ~ 0.7956 .

Sample Demographics

A total of 8,146 respondents completed the *WIC Participant Online Technology Survey*. Based on the weight-adjusted formula, the frequency for the overall sample was adjusted to 8,144 respondents. When describing the overall sample of the Western Region, the weight-adjusted

sample was used. However, in the state-level reports the unadjusted frequencies were used. Ninety-eight percent of survey respondents indicated that they were WIC participants and 2% indicated that they were neither WIC participants nor staff, but described themselves as a parent or caretaker of a child on the WIC program. Table 2 presents the distribution of responses from each of the fourteen states/Indian Tribal Organizations (ITOs) represented in the sample.

Table 2. WIC Program Online Survey Participation by State and Indian Tribal Organization (ITO)

State or ITO	Sample Frequency	Weight-Adjusted Frequency	Weighted Sample Percentage(%)
Alaska	102	101	1
American Samoa	25	25	0.3
Arizona	246	686	8
California	6,108	5,457	67
Guam	39	31	0.4
Hawaii	139	139	2
Idaho	45	175	2
Inter-Tribal Council of Arizona	28	42	0.5
Inter-Tribal Council of Nevada	4	7	0.1
Mariana Islands	51	18	0.2
Navajo Nation	5	45	0.5
Nevada	176	271	3
Oregon	850	426	5
Washington	328	723	9
TOTAL	8146	8144	100%

Age, Race, and Ethnicity

Table 3 and Figure 1 below present the weight-adjusted demographics for online survey respondents based on the aggregate sample (includes all Western Region states and ITOs). Table 3 shows the mean age, a generational breakdown by millennials (ages 20-31), and those younger and older. Pew Research defined the term millennial as those born after 1980 and at least age 18 at the time of their study. The same birth years were used in this study which shifted the age range two years making the range 20-31 rather than 18-29. In addition, Table 3 includes ethnic and racial distribution of online survey respondents. Respondents were asked to answer if they were Hispanic, followed by a question regarding race. It is important to note that most of the participants who described themselves as Hispanic skipped the race question in both the online and focus group surveys. As evidenced by the focus group participants and Spanish language online survey who wrote-in “Hispanic” or “Latino” in the “other” response option, Hispanics in this study consider their ethnicity to be equivalent to their race. The “other” category was removed from further analysis related to race except when reporting the overall demographics. Figure 1 presents online survey respondents age distribution in 5-year increments.

Table 3. Online Survey Respondents Demographics (Weight-Adjusted Statistics, N=8144)

Age	Race	Ethnicity
Mean = 29 years (<i>SD</i> =6.9) Range = 15-73 Millennial Generation (ages 20-31), 62% Younger (ages 15-19), 5% Older (ages 32 and up), 30% Missing, 3%	White, 57% African American, 7% Asian, 6% American Indian/Alaskan Native, 7% Native Hawaiian/Pacific Islander, 3% Other, 3% Missing, 17%	Hispanic, <i>n</i> =3865 (47%)

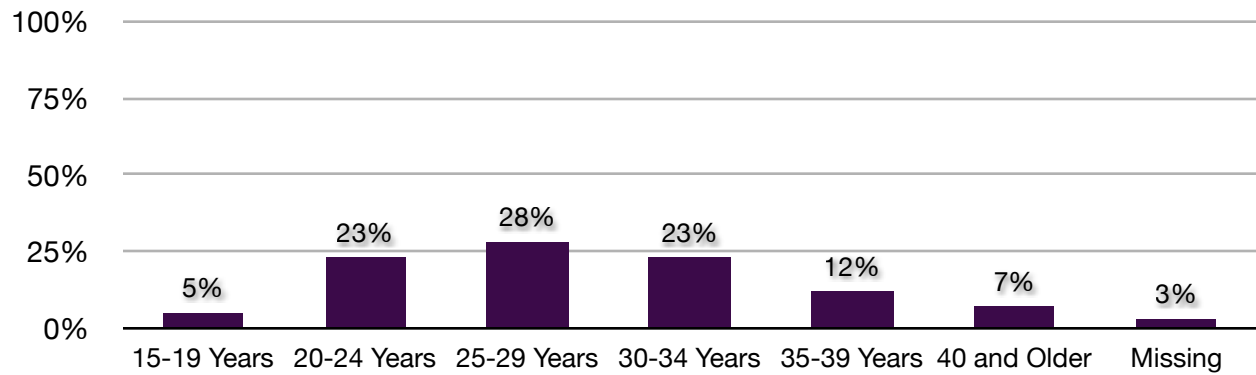


Figure 1. Online survey respondents' age (weight-adjusted percentages; N=8,144).

Parental Status and Length of Time on WIC

Table 4 depicts the average number of children in the household, the relationship of online survey respondents to the child(ren) on WIC, and the online survey respondents' client category. Most of the online survey respondents were mothers (89%). The average number of children in the home was 2 (*SD*=1.4).

Table 4. Parental Status of Online Survey Respondents (Weight-Adjusted Statistics, N=8144)

Number of Children	Relationship to the Child (ren) in WIC	WIC Client Categories
Mean, 2 children (<i>SD</i> =1.4) Range, 0-16	Mother, 89% Pregnant, 5% Father, 2% Foster parent, 1% Grandparent, 1% Other, 1% Missing, 1%	Pregnant, 16% Breastfeeding, 22% Parent/caretaker of baby <12 mo, 34% Parent/caretaker of child >1yr, 76%

As illustrated in Figure 2, 29% of survey respondents reported they have been on WIC for less than a year, while 32% have been on WIC for at least 2 years and 39% have been on WIC for more than 3 years.

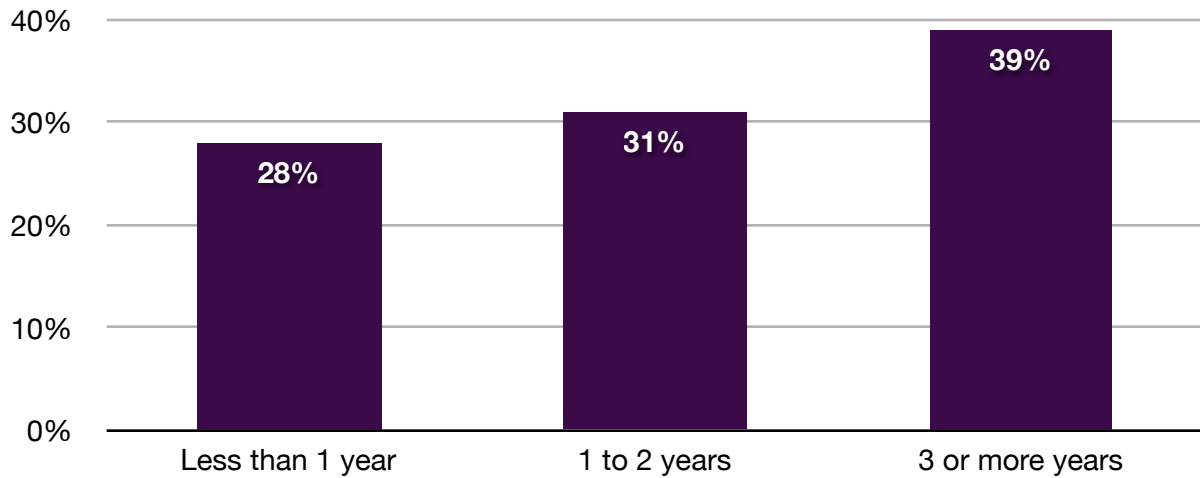


Figure 2. Online survey respondents' length of time on WIC in the past 5 years.

Data Analysis

Eligibility

To be eligible for analysis, respondents had to be a) WIC participants or b) individuals who were not enrolled in the WIC program, yet indicated that they were either a parent or caretaker of a child enrolled in the WIC program. In addition, eligible respondents must have indicated in which WIC program they enrolled.

English and Spanish Survey Data

The final survey count was 8,146 and included 7,507 English and 639 Spanish surveys. The data from those who completed the survey in Spanish and English were merged into one dataset and analyzed in aggregate. The percentage of respondents who preferred Spanish as their main language was not representative of the Western Region. An analysis of Spanish-speakers specific to California is available in the California state report (see Appendix D-4). Additionally, an analysis of all of the Spanish-speakers is available in Appendix D-13. Please note that these results are not representative of the Western Region Spanish-speakers and should be interpreted with caution.

Coding

Several new variables were created for the analysis. Two new age variables were created based on the continuous respondent age variable: 1) a categorical variable grouping respondents in five-year increments (e.g., 15-19, 20-24, etc. through 40+) and 2) a millennial generation variable to indicate whether the respondent was part of the “millennial generation” (considered to be ages 20-31), younger or older.

For the number of children variable, respondents who wrote-in “pregnant” were coded as having 0 children. This is based on the assumption that their parenting needs and behavior would be more similar to someone with no children than someone with one child.

A new variable was created to group states and ITOs into the following categories: islands (American Samoa, Guam, Hawaii, Mariana Islands), ITOs (Inter-Tribal Council of Arizona, Inter-Tribal Council of Nevada, Navajo Nation), Alaska, California, and other states (Arizona, Idaho, Nevada, New Mexico, Oregon, and Washington). For several items on which data was compared across states, the created variable was used. In many cases, variability within categories made it inappropriate to use this variable.

Descriptive and Comparative Analysis

Using the weighed data, frequencies and percentages were calculated for categorical variables, as well as means and standard deviations for continuous variables. Chi-square tests were used to compare states/ITOs to the aggregate sample on a variety of demographic variables. Adjusted

standardized residuals +/-2 indicated significant deviation from expected results. Significance was set at $p < .05$.

Contrasts of Preferred Language and Education of WIC Participants

All online survey respondents provided their highest level of education. As illustrated in Figure 2, 10% of online survey respondents completed 10th to 12th grade, 38% graduated from high school or received their GED, 35% graduated from college, and 13% completed trade or technical school. Thirty five respondents (0.4%) did not report their highest level of education.

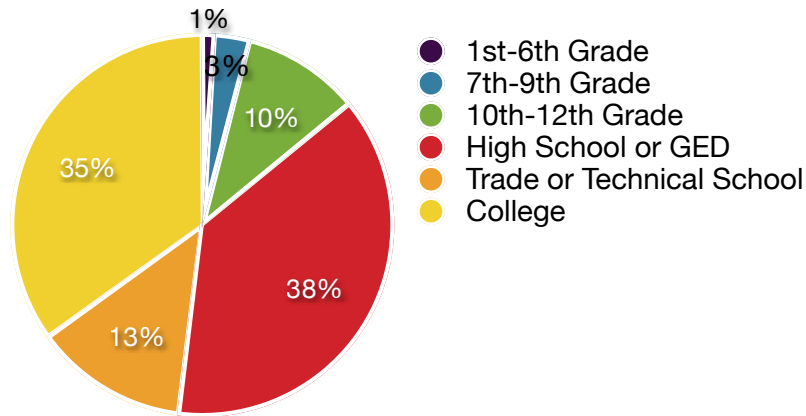


Figure 3. Education level of online survey respondents.

As illustrated in Figure 4, the majority of online survey respondents (76%) indicated English as their preferred language, while 14% preferred both languages equally and 8% preferred Spanish.

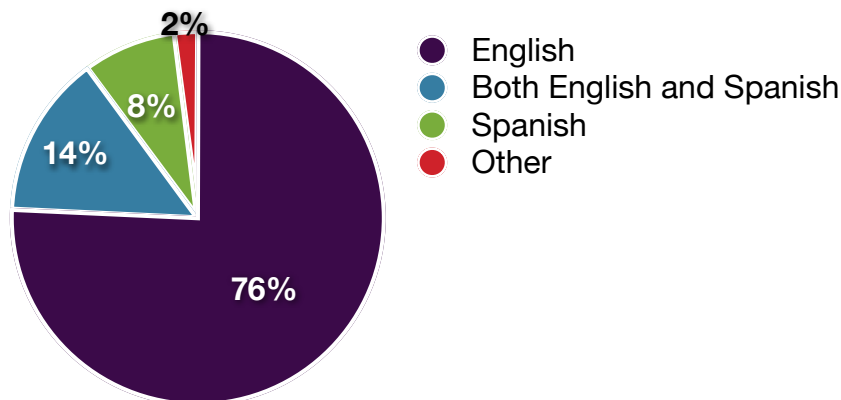
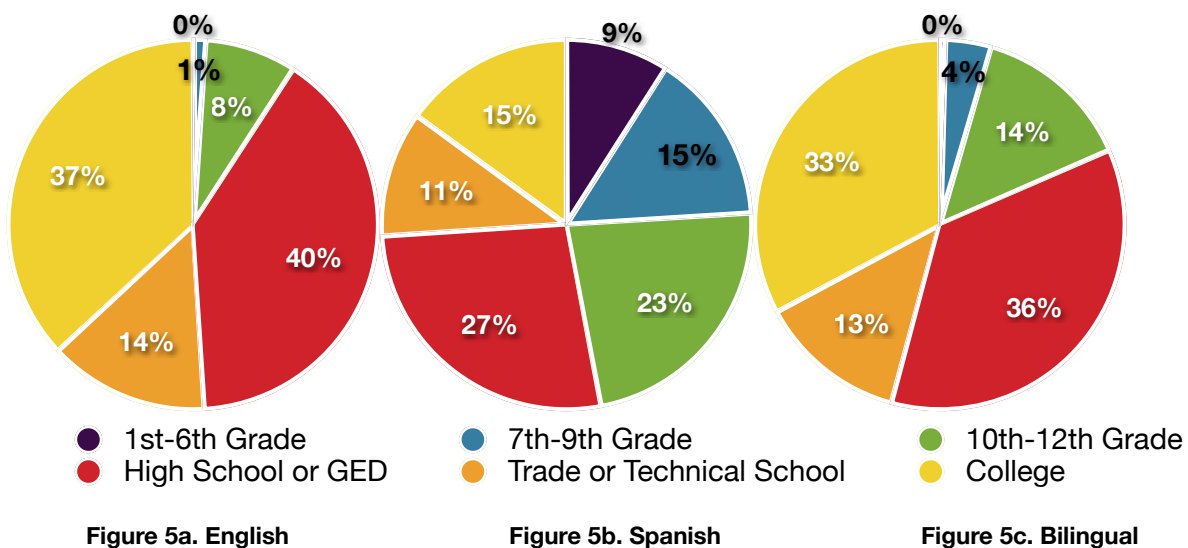


Figure 4. Preferred language of online survey respondents.

Figures 5a, 5b, and 5c contrast the education level of online survey respondents by preferred language. As illustrated, 51% of survey respondents who selected English as their preferred language (English speakers) attended trade or technical school or college. In contrast, only about one-quarter (26%) of survey respondents who reported Spanish as their preferred language (Spanish speakers) attended college or trade or technical school. It is important to note that 47% of Spanish speakers did not complete high school or a GED. In contrast, only 9% of English speakers did not complete high school or a GED. Also of interest are the differences in high school/GED education levels among online survey respondents. Specifically, only 27% of Spanish speakers had a high school diploma or GED as compared to 40% of English speakers.

Survey respondents who preferred speaking both English and Spanish (bilingual speakers) had similar education levels as those who indicated that English as their preferred language. For example, 51% of respondents who selected English and 46% of bilingual speakers had at least attended trade or technical school or college. Similarly, 40% of English speakers and 36% of bilingual speakers had a high school diploma or GED. Among survey respondents who did not complete high school or a GED, bilingual speakers (18%) fared better than Spanish speakers (47%), but worse than English speakers (9%).



Figures 5a, 5b, and 5c. Survey respondents' education level by preferred language.

WIC Online Survey Respondent Demographics by State

The tables below present the breakdown of the weight-adjusted demographic characteristics for the survey respondents by state and Indian Tribal Organization/ITO. Significant differences were found across states/ITOs for all demographic categories. Values that were higher or lower than expected based on adjusted standardized residuals are highlighted in **bold**.

Abbreviations of States and ITOs		
Alaska (AK)	American Samoa (AS)	Arizona (AZ)
California (CA)	Guam (GU)	Hawaii (HI)
Idaho (ID)	Inter Tribal Council of Arizona (ITCA)	Inter Tribal Council of Nevada (ITCN)
Mariana Islands (MP)	Navajo Nation (NN)	Nevada (NV)
Oregon (OR)	Washington (WA)	

Table 5 illustrates mean age of survey respondents by state and the percentage of millennial parents represented in each state. Notice a higher percentage of millennial parents in Alaska as compared to the WR as a whole and a lower percentage of millennials in American Samoa, Arizona, Guam, Navajo Nation, and Nevada.

Table 5. Online Survey Respondents' Age by State (N=7874; 269 missing cases)

	Full Sample N=7874	AK n=99	AS n=25	AZ n=647	CA n=5268	GU n=31	HI n=137	ID n=175	ITCA n=40	ITCN n=7	MP n=18	NN n=45	NV n=260	OR n=420	WA n=702
Mean Age (years)	29.0	28.1	32.3	29.6	28.8	30.2	27.8	28.8	26.8	32.5	32.2	30.4	29.9	29.7	29.1
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Millennial Generation (age 20-31)	64	77	40	56	65	42	72	67	75	71	50	40	57	65	67

Values that were higher or lower than expected based on adjusted standardized residuals are highlighted in **bold**.

The racial distribution within each state is shown in Table 6. Respondents were asked if they were Hispanic, followed by a question regarding race. As previously described, many respondents who described themselves as Hispanic skipped the race question, and upon further examination it was determined that Hispanics consider 'ethnicity' to be equivalent to their 'race.'

Table 6. Online Survey Respondents' Race by State (N=6781; 1363 missing cases)

	Full Sample N=6781	AK n=95	AS n=624	AZ n=624	CA n=4291	GU n=29	HI n=134	ID n=172	ITCA n=39	ITCN n=7	MP n=18	NN n=45	NV n=204	OR n=402	WA n=696
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
White	68	58	4	77	67	7	28	88	3	29	6	0	64	86	78
African American	8	6	0	5	10	0	2	2	0	0	0	0	15	3	3
Asian	7	3	4	2	9	31	21	0	0	0	39	0	7	3	3
Am. Indian/ Alaskan Native	9	30	0	11	6	3	2	5	95	71	6	100	4	6	12
Native Hawaiian /Pacific Islander	4	3	92	1	3	55	47	5	0	0	50	0	4	2	2
Other	4	0	0	5	5	3	0	0	3	0	0	0	5	1	1

Values that were higher or lower than expected based on adjusted standardized residuals are highlighted in **bold**.

There was significant variation among states/ITOs in the percentage of Hispanic respondents (see Table 7). California and Arizona had the highest levels of Hispanic representation (57%), followed closely by Nevada (53%).

Table 7. Online Survey Respondents' Hispanic Ethnicity by State (N=8088; 56 missing cases)

	Full Sample N=8088	AK n=100	AS n=25	AZ n=682	CA n=5420	GU n=31	HI n=137	ID n=175	ITCA n=41	ITCN n=7	MP n=17	NN n=45	NV n=268	OR n=422	WA n=718
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Percent Hispanic	46	7	0	57	57	16	16	9	10	0	6	0	53	15	18

Values that were higher or lower than expected based on adjusted standardized residuals are highlighted in **bold**.

The variability across states in respondents' preferred language is presented in Table 8. It is important to highlight that only 8% of the surveys were answered in Spanish, which does not mirror the actual percentage of Spanish-speaking WIC participants across the Western Region.

Table 8. Online Survey Respondents' Preferred Language by State (N=8093; 51 missing cases)

	Full Sample N=8093	AK n=100	AS n=25	AZ n=683	CA n=5416	GU n=31	HI n=137	ID n=175	ITCA n=41	ITCN n=7	MP n=18	NN n=45	NV n=271	OR n=424	WA n=720
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
English	76	94	24	68	73	90	96	91	88	100	83	100	63	89	89
Spanish	8	0	0	11	10	3	1	0	10	0	0	0	17	2	3
Both English and Spanish	14	5	0	20	16	0	2	9	0	0	0	0	19	7	7
Other	2	1	76	2	1	7	2	0	2	0	17	0	1	2	1

Values that were higher or lower than expected based on adjusted standardized residuals are highlighted in **bold**.

As show in Table 9, most states exhibited education patterns similar to that of the aggregate sample, with a few exceptions. For example, among the American Samoa (AS) participants, 44% reported completing less than a high school/GED education. It is important to note that this online survey elicited responses from WIC participants who were familiar with the use of computers and the internet, and therefore possibly have a higher level of education than participants who did not respond.

Table 9. Online Survey Respondents' Education by State (N=8110; 34 missing cases)

	Full Sample N=8110	AK n=100	AS n=25	AZ n=682	CA n=5430	GU n=30	HI n=138	ID n=175	ITCA n=41	ITCN n=6	MP n=18	NN n=45	NV n=271	OR n=426	WA n=723
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
1-6 Grade	1	0	0	1	1	3	0	0	0	0	0	0	1	1	0
7-9 Grade	3	2	24	7	2	7	0	0	2	0	0	0	7	2	3
10-12 Grade	10	10	20	16	9	20	9	7	22	0	28	0	16	8	6
High School/GED	38	43	28	31	38	40	53	42	39	50	39	20	43	41	40
Trade/Technical School	13	10	0	14	14	7	6	15	15	0	6	0	14	10	15
College	35	35	28	32	35	23	33	35	22	50	28	80	20	37	36

Table 10 illustrates the number of children living in the respondents' home and parental status.

Table 10. Online Survey Respondents' Parental Status by State

	Full Sample	AK	AS	AZ	CA	GM	HI	ID	ITCA	ITCN	MP	NN	NV	OR	WA
Number of Children	2.1	2.2	3.1	2.3	2.1	2.7	1.9	2.4	2.5	3.8	2.4	2.8	2.1	2.3	2.2
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Pregnant (N=8109)	15	15	16	14	16	16	22	13	36	0	12	0	8	16	14
Breastfeeding (N=8079)	22	29	40	20	21	28	28	27	17	0	33	80	6	29	25
Baby <12mo (N=8073)	35	45	47	39	34	40	42	31	36	29	47	80	18	39	35
Child > 1yr (N=8090)	77	79	68	73	76	80	74	82	76	100	89	100	81	80	80

Values that were higher or lower than expected based on adjusted standardized residuals are highlighted in **bold**.

Cell Phone Use, Text Messaging & Smartphone Apps

Cell Phone Use

Among online survey respondents, 92% ($n=7,518$) indicated that they own a cell phone. Table 12 presents the type of cell phone owned by online survey respondents. Fifty-eight percent of respondents reported owning a Smartphone in contrast to 27% who own a basic cell phone without an Internet or data plan and 16% who reported owning a different type of cell phone.

Table 11. Online Survey Respondents' Type of Cell Phone Owned (Weight-Adjusted Frequencies and Percentages, $N=7518$)

Type of Cell Phone	Frequency	Percent (%)
Android phone (HTC Evo, Motorola Droid, Samsung Galaxy, etc)	2702	36
Basic cell phone without an internet or data plan	2016	27
iPhone	1111	15
Other type of cell phone	1187	16
Blackberry or Microsoft Windows Phone	486	6

Figure 6 presents the type of text messaging or data plan used among respondents who own a cell phone. The majority of participants (78%) reported having unlimited text messaging plan and 54% reported having an unlimited data plan on their phone.

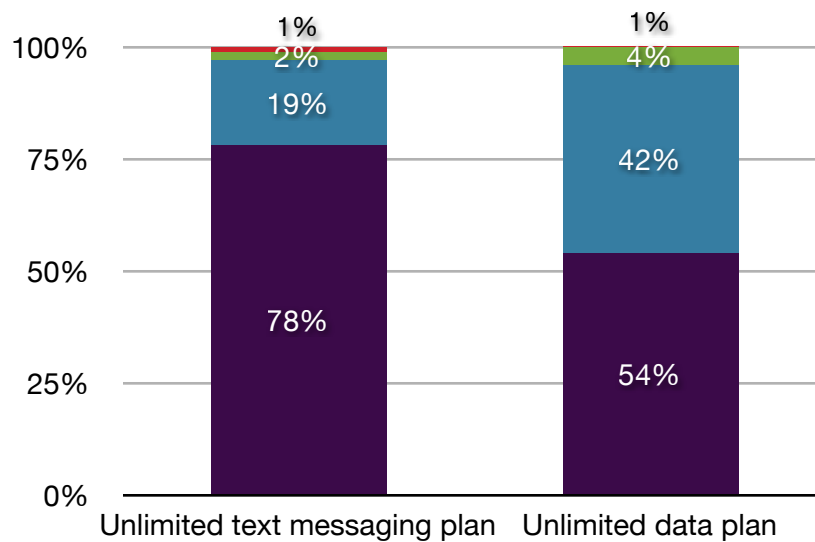


Figure 6. Online survey respondents' type of cell phone plan (N=7518).

Text Messaging

Ninety-three percent ($n=7,006$) of online survey respondents who own a cell phone reported using their cell phone to send and receive text messages. In addition, 78% have an unlimited text messaging plan, and 77% send and receive text messages daily.

Smartphone Apps

Online survey respondents were asked to indicate whether they use various phone applications (apps) or text messaging programs for parenting or health information. Online survey respondents could check ‘all that apply’ from a list of five programs or write in the names of other programs they use. Table 12 presents the data from the checklist. Most participants (69%) do not use apps or text messaging programs for parenting and health information.

Table 12. Phone Applications or Text Messaging Programs Used for Parenting and Health Information (weight-adjusted frequencies and percentages; $N=7518$)

Application/Program	Frequency	Percent (%)
None	5205	69
WebMD Mobile	1186	16
What to Expect – Pregnancy	893	12
Text4Baby	272	4
Diaper Tracker	120	2
Baby Hub	147	2
Other	453	6

Among respondents who marked “other,” the most frequent write-in responses were Baby Center ($n=195$), Baby Bump ($n=35$), Google ($n=20$), Parenting ($n=18$), and Parents Magazine ($n=17$).

Devices Used for Technology

Tasks Devices Used for Online Activities

Online survey respondents were asked to report the types of devices used for online activities as well as the types of online activities in which they participate. Participants could choose either cell phone, computer (including laptop or tablet), or both. The tables and figures below present the data on the devices used for Internet access. Among online survey respondents, computers were the most commonly used device for accessing the Internet. Moreover, the type of device used to access the Internet differed by age. For example, for each successive five-year age-group increment, online survey respondents were more likely to report that they connect to the Internet using a computer and less likely to connect using a cell phone. Similarly, when comparing millennials (ages 20-31) to older (age 32+) and younger (age 15-19) age groups, millennials and younger respondents were more likely than older respondents to report using a cell phone and less likely to report using a computer (see Figure 7).

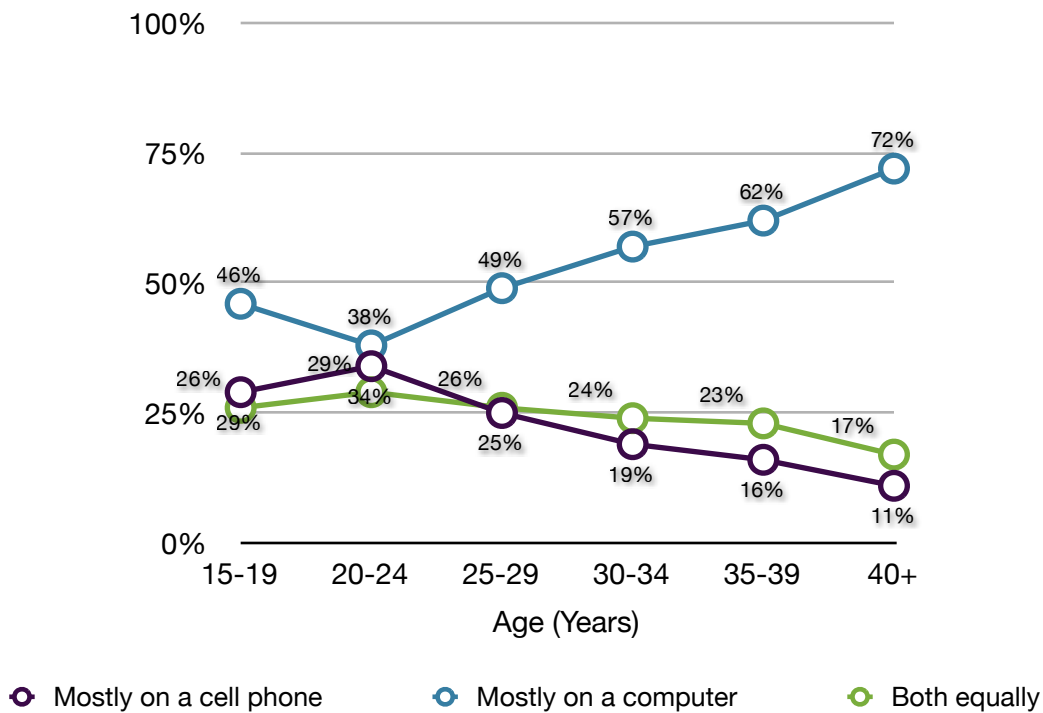


Figure 7. Age trends in devices used to connect to the Internet (weight-adjusted frequencies, N=7785).

Table 13. Devices Used by Online Survey Respondents and Focus Group Participants to Connect to the Internet (Weight-Adjusted Frequencies and Percentages, N=8144)

Type of Device	Online Survey	Percent (%)
Mostly on a desktop computer, laptop, or computer tablet	4120	51
Mostly on a cell phone	1901	23
Both equally	2019	25
Missing	103	1

Table 14 presents the use of electronic technology devices for specific tasks of interest. It is important to note that most respondents (80%) use their phones to take pictures, while more than half send photos or videos (69%), schedule or cancel appointments (58%), locate stores, businesses, restaurants, or residence (54%), and (53%) use their phone to send and receive email messages. In contrast, more than half of online survey respondents indicated that they use computers and computer tablets to send and receive email messages (66%), watch videos (60%), and locate stores, business, restaurant or residence (59%).

Table 14. Online Survey Respondents' Type of Device Used for Various Technology Tasks (Weight-Adjusted Percentages, N=8144)

Task	Cell Phone	Computer, Laptop, or Tablet	None
	%	%	%
Send/receive email messages	53	66	7
Watch videos	31	60	22
Take photos	80	17	11
Send a photo or video to someone	69	43	11
Post a photo or video online	44	49	24
Play games	42	40	31
Download applications or apps	47	29	31
Participate in a video call or video chat	15	32	53
Locate a store, business, restaurant, or residence	54	59	12
Schedule or cancel an appointment	58	29	24
Scan a QR code to get more information	18	8	70

As seen in Figure 8, 93% of online survey respondents send or receive email, 89% take and send photos, and more than 75% report watching or sending videos online. More than half (67%) of the respondents play games and download apps. However, online survey respondents were not as familiar with newer technologies, such as video chat (44%) and scanning QR codes and bar codes (25%).

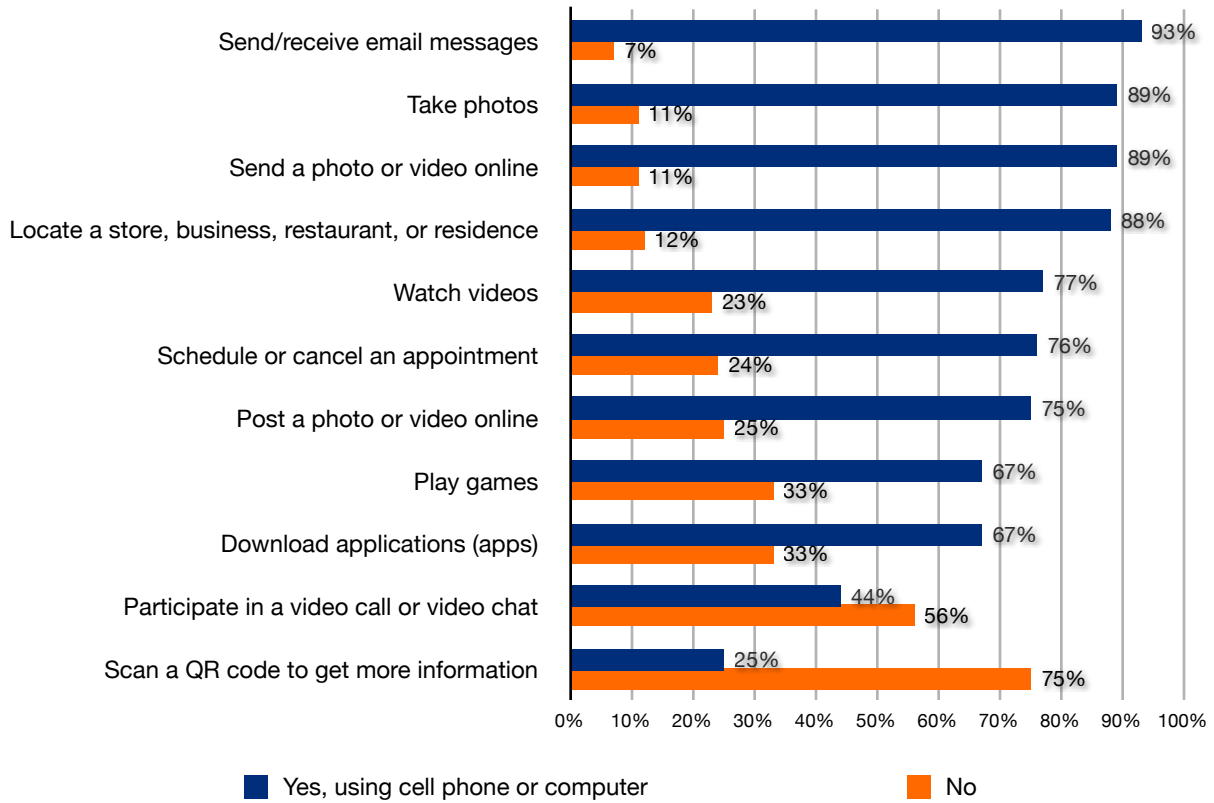


Figure 8. Percent of respondents who perform various technology tasks (weight-adjusted).

Social Media & Communication Technology Use

A set of questions assessed how frequently online survey respondents use various social media technologies. By far, text messaging was the most frequently used communication technology, with 77% of respondents reporting daily use. More than half reported using both email and Facebook daily (61% and 60%, respectively). Daily use of instant messaging (32%) was less frequent than text messaging, email, and Facebook. Other social media (11%) and Twitter (5%) were rarely used on a daily basis (see Figure 9).

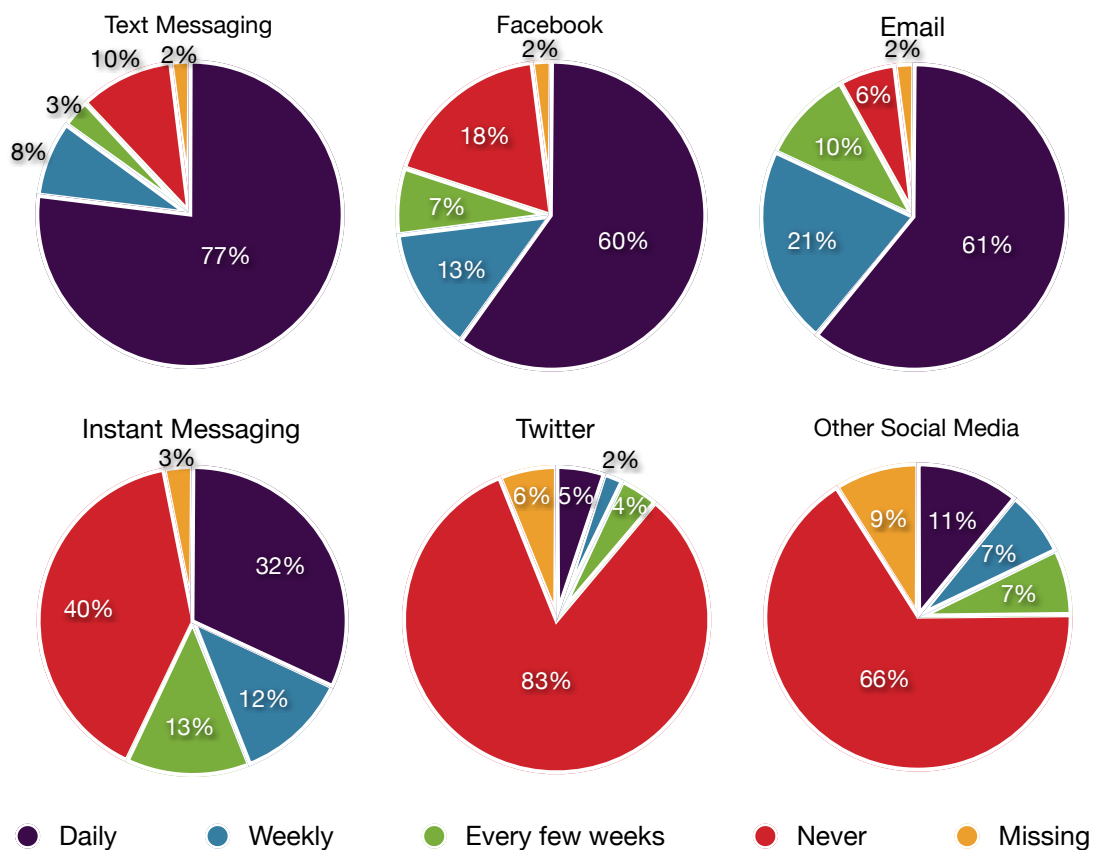


Figure 9. Comparison of social media and technology use among online survey respondents (weight-adjusted percentages).

Table 15. Online Survey Respondents' Use of Social Media (Weight-Adjusted Percentages, N=8144)

	Several Times a Day	Once a Day	3-5 Times a Week	1-2 Times a Week	Every Few Weeks	Never	Missing
	%	%	%	%	%	%	%
Text messaging	72	5	11	5	5	1	2
Facebook	47	12	11	12	7	11	1
Email	35	15	15	11	12	13	0
Instant messaging	35	7	12	12	11	24	0
Twitter	1	3	1	3	4	87	1
Other social media	15	3	5	7	3	5	63

Facebook

The majority of online survey respondents ($n=6,510$; 80%) reported using Facebook. There were significant demographic as well as geographical differences in reported Facebook use. Although Facebook use was generally high among all age groups, those in the Millennial generation and younger were significantly more likely than older respondents to report Facebook use (83%, 82%, and 77%, respectively). Similarly, when the sample was divided into age categories based on five-year increments, those in the categories ranging from 15-34 years reported rates of Facebook use between 83%-84%. Significantly lower rates were reported by 35-39 year olds (78%) and by those 40 years old or older (66%). In terms of race, American Indians/Alaskan Natives were significantly less likely to report Facebook use (73%) compared with the rest of the sample (range=80%-84%). Respondents reported increasing Facebook use with increasing education levels (see Figure 10).

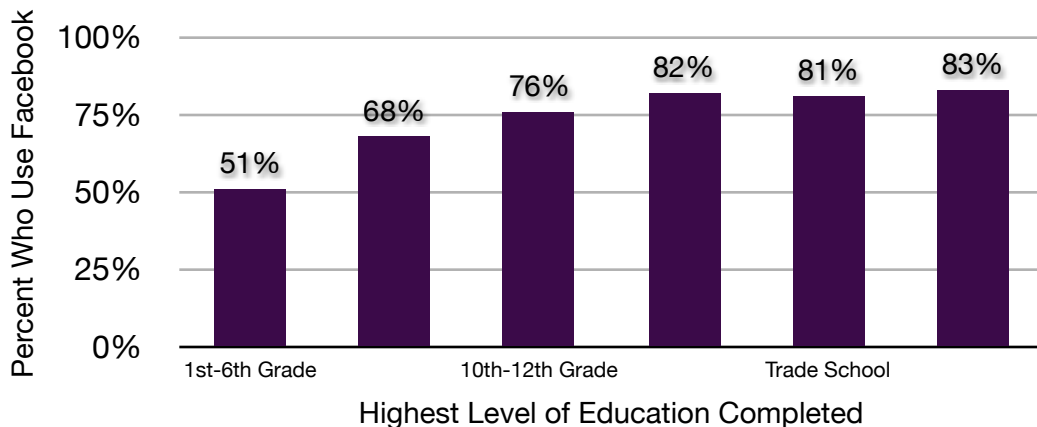


Figure 10. Facebook use by education (weight-adjusted percentages, N=8042).

To examine Facebook use by geographic area, American Samoa, Hawaii, Mariana Islands, and Guam were grouped together to form the 'islands,' ITCA, Navajo Nation, and ITCN were grouped

together to form the ‘ITO’s,’ Alaska and California were analyzed separately, and the remaining states were combined in a single variable, ‘all other states.’ As illustrated in Figure 11, similar rates of Facebook use were found among those from the islands (80%), Alaska (86%), California (80%), and ‘all other states combined’ (83%). Respondents from ITOs (48%) reported significantly lower rates of Facebook use.

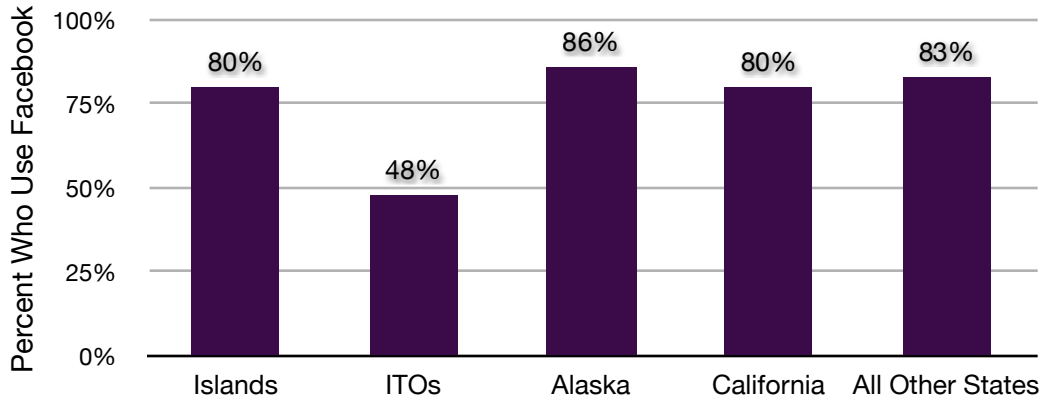


Figure 11. Facebook use by geographic group (weight-adjusted percentages, N=8070).

Table 16 depicts Facebook use by state or ITO. American Samoa (68%), ITCA (57%), ITCN (50%) and Navajo Nation (40%) respondents reported significantly lower Facebook use as compared to the aggregate sample.

Table 16. Facebook Use by State (Weight-Adjusted Percentages, N=8071)

	Full Sample N=8071	AK n=100	AS n=25	AZ n=677	CA n=5409	GU n=30	HI n=139	ID n=175	ITCA n=42	ITCN n=6	MP n=18	NN n=45	NV n=262	OR n=422	WA n=721
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Percent Who Use Facebook	81	86	68	73	80	83	81	89	57	50	83	40	82	87	88

* Values in **bold** were significantly different than the expected values based on adjusted standardized residuals of +/-2. Significance was set a p<.05; however, most comparisons were significant at p<.001.

Use of Facebook Activities

Table 17 presents the frequency of common activities often carried out by Facebook users. The most frequently cited Facebook activity among online survey respondents was ‘reading updates and news from friends and family’ (69% do this daily) followed closely by ‘liking or commenting on other people’s updates’ (58% do this daily). The two least frequently cited Facebook activities

among online survey respondents were ‘joining groups’ and ‘chatting with a group’ (11% do both daily).

Table 17. Online Survey Respondents’ Frequency of Facebook Activity among Facebook Users (Weight-Adjusted Percentages, N=6510)

	Several Times a Day	Once a Day	3-5 Times a Week	1-2 Times a Week	Every Few Weeks	Never	Missing
	%	%	%	%	%	%	%
Read updates and news from friends and family	46	23	10	10	10	1	1
"Like" or comment on other people's updates	39	19	12	12	11	5	1
Read updates and news from pages and brands that I like	29	18	11	10	14	17	1
"Like" or comment on the update of a group or business	25	13	10	10	17	24	2
Chat with friends and family	25	15	15	14	20	10	1
Send private messages to others	20	14	17	16	24	9	1
Share photos and videos with others	20	12	17	15	26	9	2
Update status	17	16	15	15	26	9	1
Join groups	7	4	5	6	27	50	2
Chat with a group	7	4	3	4	13	67	2

Interest in Using Social Media to Connect with Other WIC Moms

Among online survey respondents, 25% (n=1,994) indicated that they had ever joined an Internet group for moms or parents on a site such as Café Moms, Circle of Moms, and/or Facebook.

Online survey respondents were asked about their interest in using social media to connect with other WIC parents on a variety of topics. For each question, respondents were asked to “select all that apply” from a list of topics or forums. In addition, respondents could write in other forums that they would like to use to communicate with other WIC parents. Many parents (43%), reported that they were not interested in joining a group on the topics presented. Table 18 provides the forum topics participants could select from and highlights the significant differences (p<.05) in topic interest by respondent parental status in **bold**.

Table 18. Percent of Online Survey Respondents Interested in Joining a Virtual or Online Group on Various Topics by Parental Status* (N=8144)

Topic	Percent of Interested Respondents	Percent of those Pregnant (n=1265)	Percent of those Breastfeeding (n=320)	Percent of those with Infant < 12 mo (n=2799)	Percent of those with Child > 1 yr (n=6233)
	%	%	%	%	%
I am not interested in joining a group	43	48	38	43	43
Toddlers	34	25	37	34	38
Healthy eating	33	27	37	32	34
Parenting	33	29	40	36	34
Exercise	31	26	35	31	32
Preschoolers	27	18	26	25	30
Infants	21	25	39	39	18
Breastfeeding	17	35	29	23	14
Newborns	15	35	26	20	12
Pregnancy	14	37	18	13	12

* Note that there is some overlap between parental status categories.

** Values in **bold** were significantly different than the expected values based on adjusted standardized residuals of +/-2. Significance was set a $p < .05$, however most comparisons were significant at $p < .001$.

Preferred Social Media Platform for Online Forums

In addition to asking online survey respondents about the forum topics that interest them, respondents were also asked what social media platform they want to use when discussing these topics with other parents. As shown in Table 19, 46% of online survey respondents preferred a site for WIC moms, 38% preferred using Facebook discussion forums, and about one-third preferred neither.

Table 19. Types of Social Media Online Survey Respondents Want to Use When Communicating with Other WIC Parents (N=8144)

Social Media Site	Percent (%) of Respondents Interested
Site for WIC moms	46
Facebook	38
Neither	32
Other social media site	1

Online survey respondents who selected ‘other social media site’ were asked to fill-in what social media site they prefer to use for online forums with other parents. The most frequent responses in the ‘other social media site’ category were not social media sites, but rather email ($n=21$), in person ($n=6$), phone ($n=5$), Skype ($n=5$), and text messages ($n=5$).

Online survey respondents were asked an additional question about their preferred social media platform to connect with other WIC parents; however, this question did not include specific parenting topics for a discussion forum. In addition to asking about a site for WIC parents, response options included the existing social media sites, Facebook and CafeMom. Similar to the findings shown in Table 19, online survey respondents indicated that a site for WIC parents is preferred more than Facebook (28%) or CafeMom (3%) (see Table 20).

Table 20. Preferred Sites for Communicating with WIC Parents (N=8144)

Site	Frequency	Percent (%)
Site for WIC parents	2936	36
None	2637	32
Facebook	2259	28
CafeMom	204	3
Other social media site	24	0
Missing	85	1

The most frequent write-in comments from the online survey respondents who selected “Other social media site” were ‘none’ ($n=5$), ‘in-person’ ($n=4$), ‘BabyCenter’ ($n=3$), and ‘email’ ($n=2$).

Websites for Parenting and Health-related Information

Online survey respondents were also asked to indicate which websites they use to find parenting or health-related information. Respondents could check all that apply from a list of six websites or write in the names of other websites they use. As shown in Table 21, WebMD (39%), BabyCenter (36%), and PBS Kids (19%) were the top three most frequently mentioned websites respondents use for parenting and health-related information. Nearly one-third (27%) of online survey respondents reported that they use 'none' of the websites listed for parenting and health-related information.

Table 21. Websites Used for Health and Parenting Information by Online Survey Respondents (Weight-Adjusted Frequencies and Percentages, N=8144)

Website	Frequency	Percent (%)
WebMD	3161	39
Babycenter	2899	36
PBS Kids	1543	19
None	2207	27
The Bump	641	8
Circle of Moms	577	7
CafeMom	559	7
Other website	736	9

Of the online survey respondents who marked "Other website," the most frequent write-in responses were:

- Google ($n=120$)
- Parents.com ($n=72$)
- Parenting.com ($n=55$)
- WIC website ($n=47$)
- What to Expect.com ($n=46$)
- Kaiser Permanente (kp.org) ($n=27$)
- Kellymom ($n=20$)
- Facebook ($n=19$)
- Gerber ($n=19$)
- Pampers.com ($n=18$) and Huggies.com ($n=6$)
- Similac (strongmoms.com) ($n=12$) and Enfamil ($n=9$) websites
- Parents.com ($n=3$)
- WebMD ($n=3$)
- Gerber ($n=3$)
- Cooks.com ($n=3$)

Connecting with WIC: Current & Future WIC Services

A series of survey items probed online survey respondents about their current WIC experiences and preferences for their future interactions with WIC, including scheduling appointments, receiving nutrition education, breastfeeding support, and using technology to enhance the WIC experience.

Appointment Scheduling

Online survey respondents were most likely to schedule appointments via phone (66%) and in person (58%). The Internet, email, and text messaging were rarely used for scheduling appointments (see Figure 12). Additionally, online survey respondents were more likely to receive appointment reminder by phone (67%). One-quarter of respondents reported that they did not receive appointment reminders from WIC. The Internet, email, and text messaging were rarely used for receiving appointment reminders.

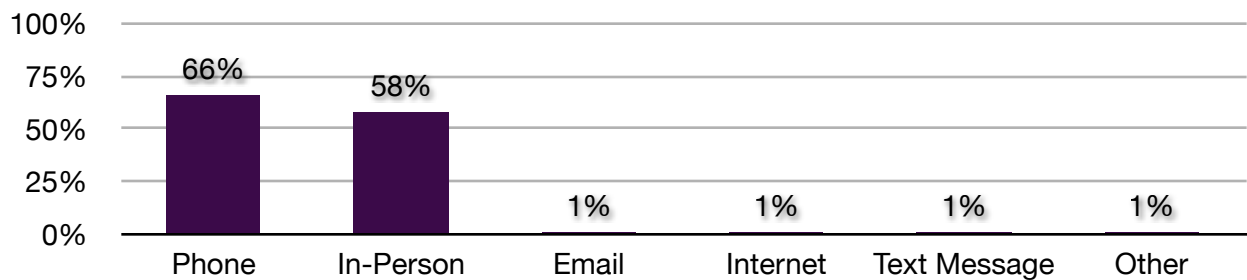


Figure 12. How respondents currently make WIC appointments (weight-adjusted percentages, N=8144).

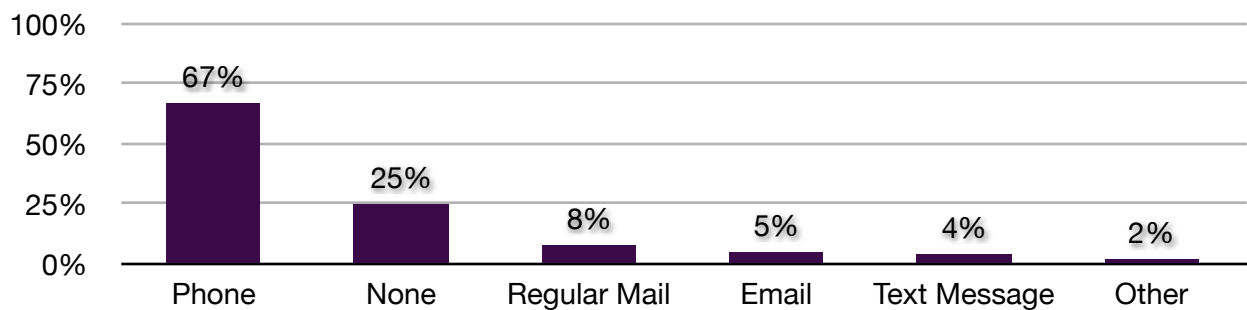


Figure 13. How online survey respondents currently receive appointment reminders (weight-adjusted percentages, N=8144).

Current and Future Modes of Nutrition Education and Breastfeeding Support

Nine different modes of nutrition education and breastfeeding support were presented to online survey respondents who reported how they were currently receiving nutrition education and breastfeeding support and how they would like to receive them in the future (see Table 22). There were significant differences in how respondents currently received nutrition education and breastfeeding support versus how they would like to receive them in the future. For example, 21% online survey respondents currently receive nutrition education on the Internet and 2% currently take lessons home. In the future, 59% would like to receive nutrition education via the Internet and 24% would like to take lessons home.

Table 22. Online Survey Respondents' Current Versus Preferred Future Modes of Nutrition Education & Breastfeeding Support (N=8144)

Mode of Nutrition Education and Breastfeeding	Current	Future
	%	%
In person, one-on-one with nutritionist or WIC staff	75	59
Group classes at my WIC clinic	36	26
On the Internet	21	59
In person, one-on-one with breastfeeding educator or peer counselor	10	18
Lessons I take home	7	24
Self-paced lessons I do on my own at my WIC clinic	2	8
Kiosk in waiting room at my WIC clinic	2	6
Video/Skype one-on-one counseling with nutritionist or WIC staff	1	9
Video/Skype one-on-one counseling with breastfeeding educator	0	4

Online survey respondents' current modes of nutrition education and breastfeeding support by state and geographic region are presented in Table 23. As illustrated, American Samoa (28%) and Navajo Nation (40%) currently use take home lessons at significantly higher rates than the aggregate sample (7%). Another interesting finding is that the Navajo Nation (20%) reported currently using more self-paced lessons than the aggregate sample (2%). The use of kiosks in clinic waiting rooms for nutrition education is significantly higher in Guam (7%) as compared to the aggregate sample (2%). Additionally, nearly half of the online survey respondents from the Navajo Nation (47%) and Alaska (49%) reported currently taking online nutrition education classes, which is significantly higher than the aggregate sample (21%). More than half of the respondents from

American Samoa (56%) and 49% of respondents from Oregon reported currently receiving group nutrition education classes, which is significantly higher than the aggregate sample (36%). Finally, in-person, one-on-one breastfeeding counseling with a breastfeeding educator or peer counselor was significantly higher among Navajo Nation respondents as compared to the aggregate sample (10%).

Insert table 23 of current NE modes

Online survey respondents' preferred future modes of nutrition education and breastfeeding support by state and geographic region are presented in Table 24. As shown, 76% of respondents from Nevada, 63% from California, and 64% for Oregon reported that they would like to receive nutrition education via the Internet. These findings are significantly higher than that of the aggregate sample (59%). In addition, 12% of respondents from Idaho would like to receive nutrition education via kiosks placed in clinic waiting rooms, which is significantly higher than that of the aggregate sample (6%). A desire to receive breastfeeding support via video chat/Skype was significantly higher among respondents from the Mariana Islands (17%) and American Samoa (28%) than that of the aggregate sample (4%). In addition, the desire to receive nutrition education via video chat/Skype was significantly higher among respondents from American Samoa (32%), Navajo Nation (20%), and Guam (19%) than that of the aggregate sample (9%).

insert future NE modes chart

Table 24

Additional Analysis of Current & Future WIC Services (Nutrition Education and Breastfeeding Support) by Selected Demographics

In addition to differences in current and future WIC services by state, the relationships between these modes and respondent age, education level, and race/ethnicity were explored. The following significant differences emerged:

Current Modes of WIC Nutrition Education

- *Education and Group Classes.* There was an inverse relationship between education level and receiving nutrition education in group classes such that respondents with lower levels of education had a higher than expected attendance in a group class. Specifically, 59% of online survey respondents who completed less than 6th grade and 43% who completed 7th-9th grade reported attending group classes, while only 35% of online survey respondents with higher levels of education (above 10th grade) reported attending group classes.
- *Age and Internet.* As age increased, the proportion of respondents who took classes over the Internet also increased, ranging from 14% for 15-19 years olds to 27% for those 40 years old or older. It is important to note that the sample size of younger (age 15-19) online survey respondents was lower than the sample size of millennial and older (age 32+) respondents.
- *Education and Internet.* Education was associated with the use of online nutrition education classes. Online survey respondents who completed at least high school/GED (21%), trade school (23%), or college (23%) reported the highest participation in online nutrition education classes.
- *Age and One-On-One Breastfeeding Education.* The younger online survey respondents (ages 15-19) reported most frequently (15%) receiving breastfeeding education through one-on-one sessions with a breastfeeding educator or peer counselor.
- *Pregnant and Breastfeeding Status and One-On-One Breastfeeding Education.* Among online survey respondents who were pregnant, 15% reported receiving one-on-one breastfeeding education; 26% of those currently breastfeeding reported receiving one-on-one breastfeeding education.
- *Age and One-On-One Nutrition Education.* Younger online survey respondents (ages 15-19) reported receiving higher than expected levels of nutrition education through one-on-one sessions with a WIC nutritionist (75%). As age increased, the proportion of respondents receiving nutrition education in this manner decreased.

Preferred Future Modes of WIC Nutrition Education

- *Age and Group Classes.* Younger online survey respondents (15-19 years) reported higher than expected desire to join group nutrition education classes (32%). The percentage of online survey respondents from the millennial and older age categories who would like group classes ranged from 23% to 26%.
- *Education and Group Classes.* Online survey respondents with the lowest levels of education (1st-6th grade and 7th-9th grade) reported higher than expected preference for group classes (53% and 38%, respectively). For all other education levels, the percentage of respondents who would like group classes ranged from 24%-30%.
- *Education and One-On-One Nutrition Education.* Online survey respondents who completed 7th-9th and 10th-12th grade report higher than expected desire to receive one-on-one counseling with a WIC nutritionist (68% and 64%, respectively). Respondents who completed college and those with less than 6th grade education had lower than expected desire to receive one-on-one counseling with a WIC nutritionist (56% and 53%, respectively).
- *Pregnant and Breastfeeding Status and One-On-One Breastfeeding Education.* Pregnant online survey respondents reported higher than expected desire to engage in one-on-one breastfeeding education compared to those not pregnant (33% vs. 15%). Respondents who were currently breastfeeding also reported higher than expected desire to engage in one-on-one breastfeeding education compared to those not currently breastfeeding (33% vs 13%).
- *Age and One-On-One Breastfeeding Education.* There was an inverse linear relationship between age and the desire for one-on-one breastfeeding education. As age increased, the preference for one-on-one breastfeeding education decreased.
- *Education and One-On-One Breastfeeding Education.* Online survey respondents with the lowest levels of education (1st-6th grade and 7th-9th grade) reported higher than expected preference for one-on-one breastfeeding education (31% and 25%, respectively). For all other education levels, the percent of online survey respondents who preferred one-on-one breastfeeding education ranged from 16%-18%.
- *Age and Take Home Lessons.* Online survey respondents in the “millennial generation” (20-31 years) reported a higher than expected preference for take home lessons (25%). Older (age 32+) and younger (age 15-19) respondents desire for take home lessons ranged from 18-22%.

- *Education and Take Home Lessons.* As online survey respondents' level of education increased, so did their desire for take home lessons (percentages ranged from 17%-26%).
- *Age and Internet.* Online survey respondents age 35-39 reported significantly higher than expected interest in Internet classes (67%).
- *Education and Internet.* As online survey respondents' education level increased, the percentage of respondents who would prefer Internet classes also increased (percentages ranged from 21%-65%).
- *Hispanic Ethnicity and Internet.* Non-Hispanics had higher than expected desire to engage in Internet lessons (61% vs 59%).
- *Race and Internet.* American Indians/Alaskan Natives and Native Hawaiian/Pacific Islanders had lower than expected desire for Internet lessons (44% and 51%, respectively). Rates for White, Black, and Asians ranges from 62%-64%.
- *Age and Video/Skype Counseling.* Online survey respondents in the "millennial generation" (20-31 years) had a higher than expected desire for nutrition education through video or Skype sessions with a nutritionist (9%).
- *Education and Video/Skype Counseling.* Online survey respondents with a college or technical/trade school education had a higher than expected desire for nutrition education through video or Skype sessions with a nutritionist (10% and 9%, respectively).
- *Pregnant and Breastfeeding Status and Video/Skype Breastfeeding Counseling.* Online survey respondents who were pregnant and those who were breastfeeding had higher than expected desires for video/Skype breastfeeding counseling.

Nutrition and Breastfeeding-Related Resources

Online survey respondents were asked to select from a list of people or places they would turn to for answers concerning nutrition- and breastfeeding-related questions. In addition to being able to select as many responses as appropriate, respondents could write in sources that were not included in the response options. As illustrated in Figure 14, more than one-third of online survey respondents indicated that they search the Internet, ask a health-care provider, ask a family/friend, or call WIC for nutrition- and breastfeeding-related questions.

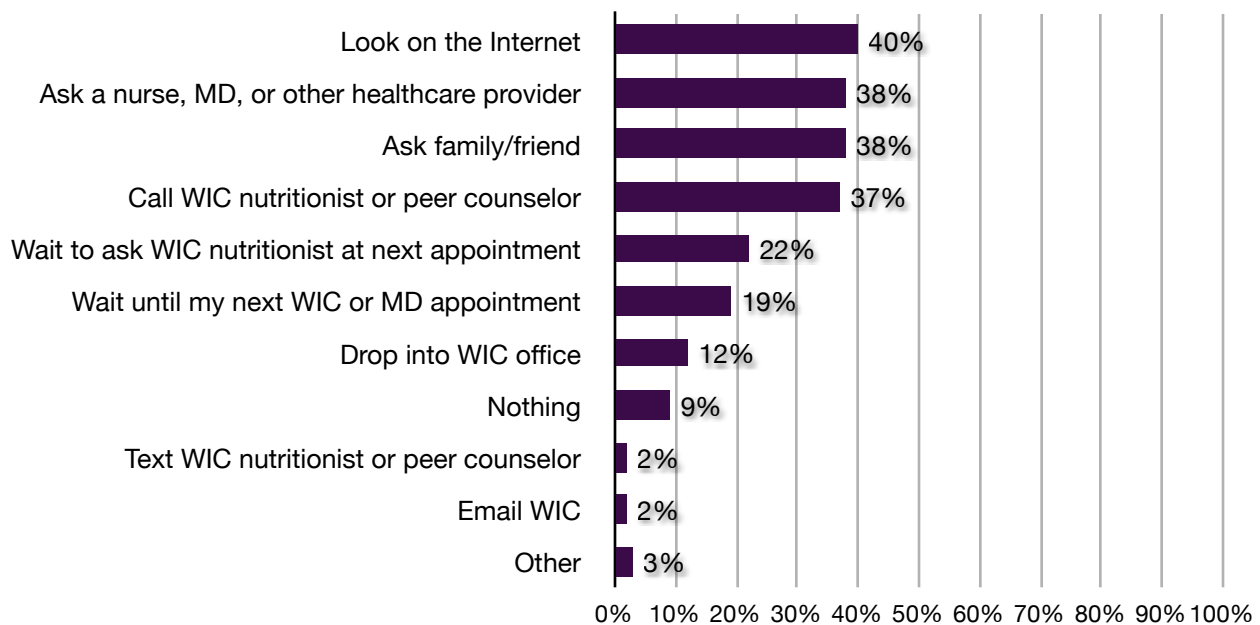


Figure 14. Resources respondents look for answers to nutrition and breastfeeding questions (weight-adjusted percentages, $N=8144$).

Of the respondents who marked the “Other” category, the most frequent write-in responses were:

- Not currently breastfeeding ($n=35$)
- Does not apply ($n=26$)
- Talk to a lactation specialist or La Leche League ($n=27$)
- Ask a specific friend or family member ($n=14$), including on Facebook ($n=2$)
- Search online ($n=15$)
- Consult books ($n=14$)
- Ask a doctor, nurse, or other healthcare provider ($n=13$)
- Talk to someone at WIC ($n=11$)
- Call a breastfeeding support hotline such as Loving Support ($n=8$)

Perceived Usefulness of Various Technologies to Connect with WIC

Online survey respondents were asked to rate how useful the use of various technologies would be to their WIC experience. Response categories include “very useful,” “somewhat useful,” and “not useful.” Table 25 illustrates that appointment reminders via text message (67%), followed by scheduling WIC appointments online (64%), and access to recipes to and cooking demonstration videos featuring WIC foods (63%) were rated as “very useful” technologies.

Table 25. Perceived Usefulness of Cell Phone and Online Technologies for WIC Experiences (Weight-Adjusted Percentages, N=8144)

Technology	Very Useful	Somewhat Useful	Not Useful	Missing
	%	%	%	%
Receive appointment reminders via text message	67	18	12	3
Receive appointment reminders via email	57	28	12	3
Schedule your WIC appointments online	64	22	11	3
Text questions to a WIC nutritionist or breastfeeding peer counselor	51	27	19	4
Attend a scheduled WIC class online with a live instructor	43	32	22	4
Access recipes and cooking demonstration videos online featuring WIC foods	63	25	9	3
Access breastfeeding videos available online	43	24	28	5
Read answers to frequently asked questions online	59	29	9	4

Additional analyses indicated that online survey respondents who connect to the Internet with a cell phone or a cell phone and a computer equally, are significantly more likely to report that all of the WIC services in Table 25 would be “very useful.”

Respondents who currently send and receive email via their cell phone (65%) or a computer/laptop/tablet (60%) reported that it would be “very useful” to receive a WIC appointment reminder via email (see Figure 15).

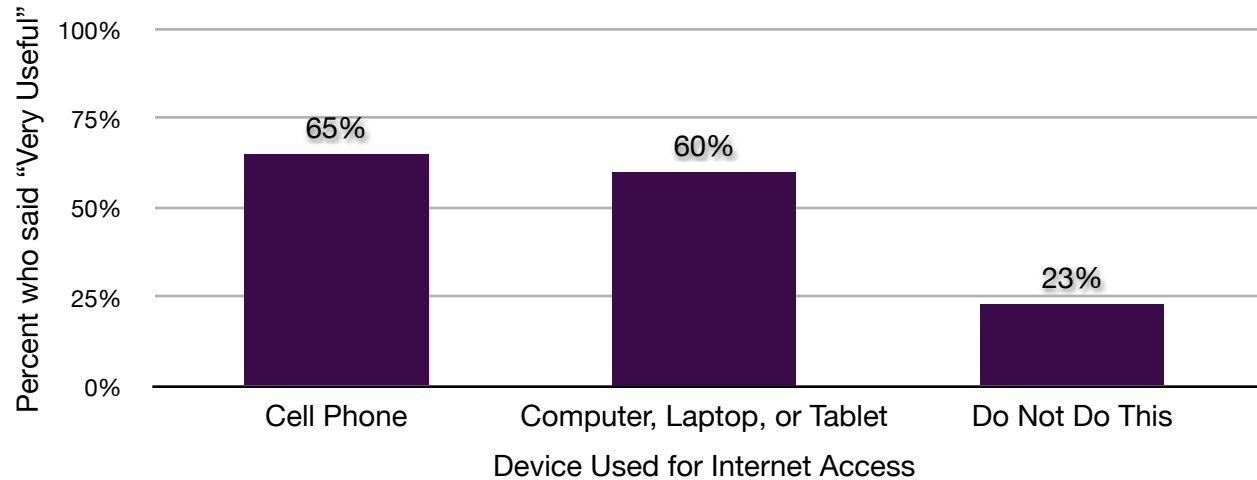


Figure 15. Perceived usefulness of receiving appointment reminders via email based on how respondents send/receive email messages (N=8144).

Online survey respondents who currently watch videos online via cell phone or a computer/laptop/tablet reported that it would be “very useful” to take an online live WIC class, access recipes and cooking demos with WIC foods, and access breastfeeding videos online (see Figure 16). For example, more than half of respondents who watched videos via cell phone online reported that it would be “very useful” to take an online live WIC class (51%), access recipes and cooking demos with WIC foods (73%), and access breastfeeding videos online (54%). Among respondents who watch videos online using the computer/laptop/tablet reported that it would be “very useful” to take an online live WIC class (47%), access recipes and cooking demos with WIC foods (69%), and access breastfeeding videos online (49%). Of particular interest, survey respondents who do not currently watch videos online reported that it would be “very useful” to take an online live WIC class (33%), access recipes and cooking demos with WIC foods (50%), and access breastfeeding videos online (31%). These findings suggest that online survey respondents perceive that accessing recipes and cooking demos with WIC foods online would be “very useful.”

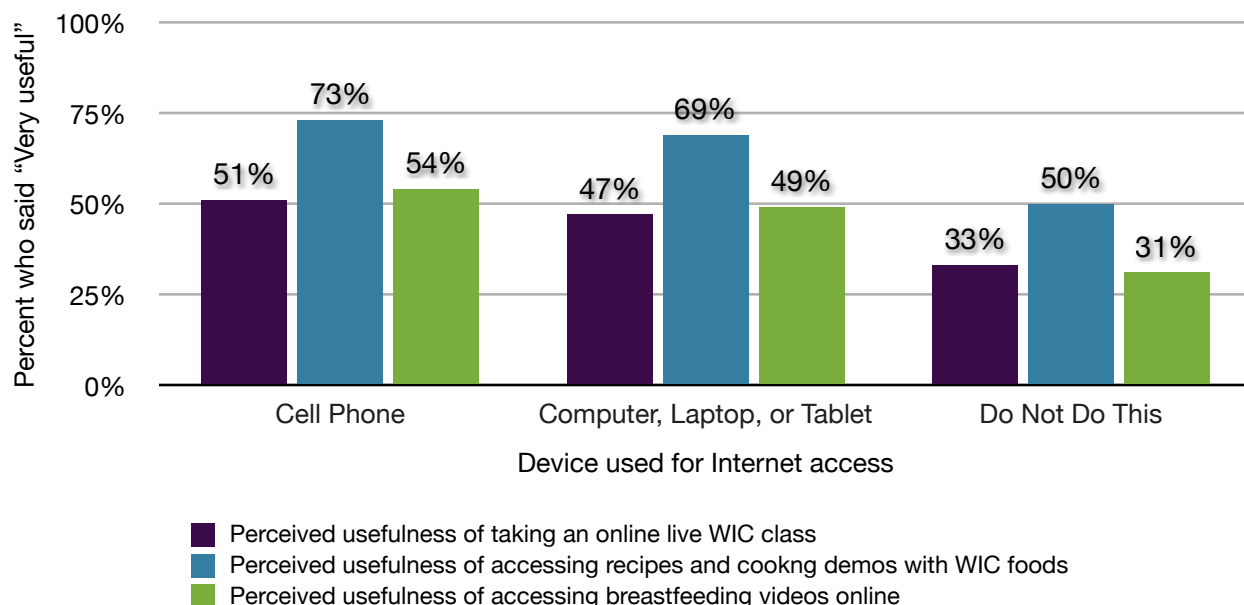


Figure 16. Perceived usefulness of various online WIC services based on how respondents watch videos online (N=8144).

No differences existed between the geographical regions and the aggregate sample in regard to perceived usefulness of various cell phone and online technologies (see Table 26). However, a state level comparison showed differences among these WIC across the different states and ITOs. For example, survey respondents from California reported higher than expected usefulness for all services except for scheduling WIC appointments online (51%).

Table 26. Geographical Comparison of Those Who Perceive Various Cell Phone and Online Technologies Within WIC To Be “Very Useful” (Weight-Adjusted Percentages, N=8144)

	Full Sample	Islands	ITOs	AK	CA	All Other States
	%	%	%	%	%	%
Receive appt. reminders via text	67	65	51	67	70	67
Receive appt. reminders via email	57	55	41	50	62	51
Schedule WIC appointments online	64	64	34	65	71	57
Text questions to WIC nutritionist or breastfeeding peer counselor	51	49	39	45	54	51
Attend a scheduled WIC class online with a live instructor	43	43	13	28	49	36
Access recipes & cooking demos online featuring WIC foods	63	64	40	51	68	59
Access breastfeeding videos online	43	51	31	34	48	40

	Full Sample	Islands	ITOs	AK	CA	All Other States
Read answers to frequently asked questions online	59	64	37	55	65	56

Table 27. State Comparison of Those Who Perceive Various Cell Phone and Online Technologies Within WIC To Be “Very Useful” (Weight-Adjusted Percentages)

	AK	AS	AZ	CA	GU	HI	ID	ITCA	ITCN	MP	NN	NV	OR	WA
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Receive appt. reminders via text	67	48	66	70	59	71	60	50	0	53	60	65	71	68
Receive appt. reminders via email	50	63	42	62	77	47	42	26	0	67	60	54	69	49
Schedule WIC appointments online	65	48	51	71	70	66	40	11	0	69	60	66	70	55
Text questions to WIC nutritionist or breastfeeding peer counselor	45	32	51	54	45	52	45	43	0	53	40	46	51	54
Attend a scheduled WIC class online with a live instructor	28	58	34	49	45	39	25	8	0	44	20	41	47	30
Access recipes & cooking demos online featuring WIC foods	51	48	56	68	69	65	51	46	0	75	40	68	61	60
Access breastfeeding videos online	34	63	42	48	59	46	29	23	29	56	40	41	38	41
Read answers to frequently asked questions online	55	57	56	65	72	62	51	34	29	63	40	57	56	57

*Values in **bold** were significantly different than the expected values based on adjusted standardized residuals of +/-2. Significance was set a $p < .05$, however most comparisons were significant at $p < .001$.

Video Chat/Counseling Sessions

Online survey respondents were asked to rate how useful it would be to participate in a video chat or counseling sessions with various WIC staff. The aggregate data is presented below. In addition, the data were analyzed based on parental status and significant differences were found within each category. Specifically:

- *Pregnant respondents* were significantly more likely to report that a video chat with a breastfeeding educator would be “very useful” and less likely to think that a video chat with a nutritionist or other WIC staff would be “very useful” compared to respondents who were not pregnant.
- *Breastfeeding respondents* were significantly more likely to report that a video chat with a breastfeeding educator would be “very useful” compared to respondents who were not breastfeeding.
- *Parents/caregivers of infants less than twelve months old* were significantly more likely to think that a video chat with a breastfeeding educator would be “very useful” compared to respondents who did not have an infant.
- *Parents/caregivers of children older than one year old* were significantly less likely to report that it would be “very useful” to video chat with breastfeeding educator and more likely to report that it would be “very useful” to video chat with other WIC staff.

Table 28. Online Survey Respondents’ Perceived Usefulness of Video Chats/Counseling Sessions with Various WIC Staff (Weight-Adjusted Percentages, N=8144)

WIC Staff	Very Useful	Somewhat Useful	Not Useful	Missing
	%	%	%	%
Nutritionist	43	33	22	2
Breastfeeding Educator	33	26	37	5
Other WIC staff	38	34	24	4

Table 29. Online Survey Respondents’ Reporting the Usefulness of Video Chats/Counseling Sessions as “very useful” by Parental Status (Weight-Adjusted Percentages, N=8144)

	Pregnant	Breastfeeding	Child <12 mo	Child > 1 yr
	%	%	%	%
Nutritionist	37	43	45	44
Breastfeeding educator	39	45	39	34
Other WIC staff	33	39	40	40

As shown in Table 30, Guam (77%), American Samoa (68%), and Nevada (50%) reported higher than expected perceived usefulness of video chats/counseling sessions with a WIC nutritionist. In addition, Navajo Nation (80%), American Samoa (64%), and Guam (55%) reported higher than expected perceived usefulness of video chats/counseling sessions with a WIC breastfeeding educator. Guam (72%) and Mariana Islands (73%) reported higher than expected perceived usefulness of video chats/counseling sessions with other WIC staff.

Table 30. Online Survey Respondents’ Who Find Video Chats/Counseling Sessions “Very Useful” by State (Weight-Adjusted Percentages; N=8144)

	Full Sample	AK	AS	AZ	CA	GU	HI	ID	ITCA	ITCN	MP	NN	NV	OR	WA
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Nutritionist	43	30	68	41	47	77	44	25	33	71	65	40	50	37	32
Breastfeeding educator	33	22	64	36	36	55	39	20	32	60	59	80	32	26	26
Other WIC staff	38	27	60	39	41	72	39	22	34	71	73	40	46	34	27

* Values in **bold** were significantly different than the expected values based on adjusted standardized residuals of +/-2. Significance was set a $p < .05$, however most comparisons were significant at $p < .001$.

Figure 17 illustrates the perceived usefulness of video/Skype counseling by online respondents’ education level. As shown, over 40% of respondents want to video chat with a WIC nutritionist while over 30% want to video chat with a WIC breastfeeding educator or other WIC staff. Interestingly, individuals with a 7th-9th grade education level are the most likely to perceive video chat with WIC as useful.

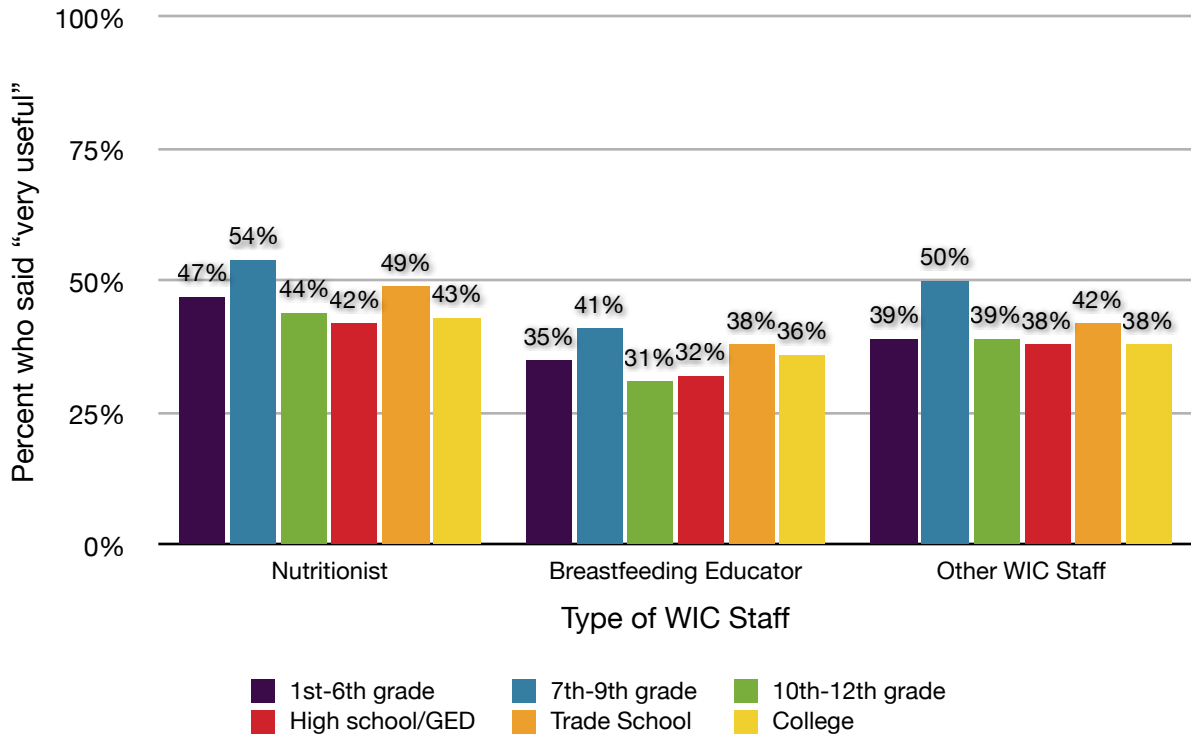


Figure 17. Perceived usefulness of video/Skype counseling by education (weight-adjusted percentages).

Perceived Usefulness of Different Technologies for Nutrition Education

Table 31. Perceived Usefulness of Various Methods for Nutrition Education (Weight-Adjusted Percentages; N=8144)

NE Contact Methods	Very Useful	Somewhat Useful	Not Useful	Missing
	%	%	%	%
Text message	59	23	15	3
Twitter	12	13	66	10
Email	59	28	10	3

Perceived usefulness was further explored among online survey respondents who have a cell phone. Those with an unlimited text messaging plan were significantly more likely to report that receiving nutrition education via text, Twitter, and email would be “very useful” (70%, 15%, and 63%, respectively) compared to those without an unlimited plan, and those who don’t know their type of plan. Likewise, among those who have a cell phone, respondents with an unlimited data plan were significantly more likely to report that receiving nutrition education via text, Twitter, and email would be “very useful” (72%, 16%, 66%, respectively) compared to those without an unlimited plan and those who don’t know their type of plan.

There was a significant negative correlation between respondents’ age and perceived usefulness of receiving nutrition education via text message such that as age increased, the reported usefulness decreased. Age was significantly and positively correlated with perceived usefulness of receiving nutrition education via email such that as age increased, the reported usefulness increased. No significant correlation was found between age and perceived usefulness of receiving nutrition education via Twitter, likely due to the small percentage of respondents who use Twitter.

Perceived Usefulness of Technologies to Shop for WIC Foods

In questions 26 through 28 of the online survey (see Appendix A-1), participants viewed mockups of technologies that could help participants shop for WIC foods or receive nutrition or breastfeeding education. Participants were then asked to rate the perceived usefulness of each technology.

As shown in Table 32, over 60% of online survey respondents reported that the mockups of technologies to shop for WIC foods are “very useful.”

Table 32. Online Survey Respondents’ Perceived Usefulness of WIC Connect Visuals (Weight-Adjusted Percentages, N=8144)

WIC Connect Visuals	Very Useful	Somewhat Useful	Not Useful	Missing
	%	%	%	%
An online authorized store locator by zip code	62	24	11	3
A WIC authorized food shopping guide online, that I could sort by category (Pregnant, Infant, Child) or sort by food type	73	19	6	2
A free app that can scan a UPC label or bar code and tell you if a WIC food is authorized	71	15	11	3

Perceived Usefulness of Checking WIC EBT Card Balance Online

Online survey respondents were asked how useful it would be to check a WIC EBT card balance online anytime during the month. As shown in Figure 18, the majority of online survey respondents (95%) reported it would be “very useful” or “somewhat useful.”

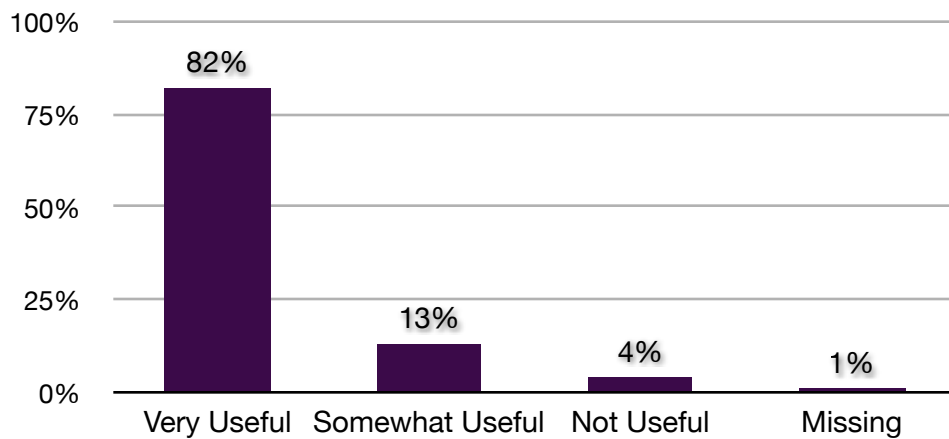


Figure 18. Perceived usefulness of checking WIC EBT card balance online (weight-adjusted percentage, N=8144).

In an effort to determine how useful it would be to check one’s WIC EBT card balance at the grocery store, an analysis examining the perceived usefulness of checking WIC EBT card balance among those who have a cell phone was conducted. Among online survey respondents who have a cell phone, those with an unlimited data plan were significantly more likely to report that it would be “very useful” to check their WIC food balances online compared to those without an unlimited data plan and those who did not know whether they had an unlimited data plan (87% vs. 80% & 79%, respectively).

Likelihood of a Using a WIC Chatroom for WIC Parents to Chat Together Online

Online survey respondents were shown a visual of a potential WIC chatroom (question 28, Appendix A-1) and asked how likely they would be to join a WIC chatroom to chat online with other WIC parents. As shown in Figure 18, the majority (70%) of online survey respondents are “somewhat likely” or “very likely” to participate in an chatroom with other WIC parents

Ranking of Technologies Based on the Online Participant Survey

A review of the Online Participant Survey data indicates that WIC participants are most interested in the following technologies/services to interact with the WIC program in the future.

Table 33. Technology and Percentage of Online Survey Respondents that Ranked this Technology as Very Useful (n=8,144)⁵²

Technology	Percentage Ranked as “Very Useful”
WIC EBT Card Balance	82%
Online WIC authorized food shopping guide	73%
UPC scanning app to check if food is authorized	71%
Appointment reminders via text message	67%
Online recipes and cooking demos	63%
Online authorized store locator	62%
Nutrition education via email or text	59%
Appointment reminders via email	57%

The preferences for these technologies should be reviewed along with the preferences from the WIC participant focus groups and WIC-eligible focus groups prior to determining the priorities for the cost analysis and feasibility study.

Similarities between among Millennial-age WIC participants and the general population of Millennials

Millennial-age WIC survey respondents reported comparable use of text messaging and Twitter to that of Millennials in the general population (see Table 33). For example, sending and receiving text messages with a cell phone was equally popular among Millennial-aged WIC survey respondents (ages 20-31) who own a cell phone (95%, n=4,439) and a nationally representative sample of 18-29 year-old adult cell phone owners (95%, n=321) who participated in a 2011 Pew Research

Center survey¹. As noted previously, Pew Research defined the term millennial as those born after 1980 and at least age 18 at the time of the study in January of 2010. The same birth years were used in the comparisons below. Notice the shift in the age range from 18-29 to 20-31 to compensate for the time elapsed. Twitter use was very similar between Millennial-aged WIC survey respondents (13.3%) and nationally representative sample of 18-29 year-old adults (14%) who participated in a 2010 Pew Research Center survey².

Table 34. Comparison of WIC and Non-WIC Millennials' Cell Phone Usage (Based on Cell Phone Owners)

Task Via Cell Phone	WIC Millennials	Pew Research Center Millennials ^a
Send/receive text messages	95%	95%
Take photos	88%	91%
Send a photo or video to someone	78%	72%
Send/receive email messages	61%	51%
Download applications or apps	56%	49%
Post a photo or video online	52%	37%
Play games	51%	53%
Watch videos	37%	44%
Participate in a video call or video chat	20%	14%

^aSource: *Pew Research Center, 2011b*.

WIC Millennials Report Higher Rates of Smartphone Ownership and Facebook Use than the General Population of Millennials

The majority (93%, $n=4,687$) of Millennial-aged WIC survey respondents (aged 20-31) reported owning a cell phone. Millennial-aged WIC online survey respondents reported a higher rate of Smartphone ownership (61%) as compared to a nationally-representative sample of adults aged 18-29 (52%, $n=337$) recently surveyed by The Pew Research Center's Internet & American Life Project in April-May 2011³.

¹ Pew Research Center. (2011b). Americans and their cell phones. Washington, DC: Smith, A.

² Pew Research Center. (2010b). Millennials: A portrait of Generation Next. Washington, DC: Paul Taylor and Scott Keeter (Eds.).

³ Pew Research Center. (2011a). 35% of American adults own a smartphone: One-quarter of smartphone owners use their phone for most of their online browsing. Washington, DC: Smith, A.

More Millennial-aged WIC survey respondents (83%, $n=4,153$) use Facebook than a nationally representative sample of adults (71%) aged 18-29 years⁴. Moreover, frequency of Facebook use was higher among WIC Millennials. When asked “how often do you use Facebook?”, 51% ($n=2,538$) of WIC Millennial-age survey respondents reported using Facebook “several times a day.” In comparison, 29% of 18-29 year-old respondents to a 2010 Pew Research Center survey reported visiting their social network profile “several times a day”⁵.

⁴ Pew Research Center. (2010a). *Social media and mobile Internet use among teens and young adults*. Washington, DC: Lenhart, A, Purcell, K, Smith, A., & Zickuhr, K.

⁵ Pew Research Center. (2010b). *Millennials: A portrait of Generation Next*. Washington, DC: Paul Taylor and Scott Keeter (Eds.).

Conclusions

Based on the results of the WIC Participant Online Survey, WIC programs in the Western Region should consider implementing the use of text messaging and email for appointment reminders and nutrition education. In addition, WIC should explore using Facebook as a way to provide nutrition education to current WIC participants. Other emerging technologies to be explored include video chat, mobile websites and Smartphone apps. Mobile websites or Smartphone apps, among other things, can help WIC participants access WIC services at their convenience and shop for WIC foods. Video chat is a promising option to counsel WIC participants who live in remote areas and often have transportation issues.

WIC participants want to receive appointment reminders via text message. Given that nearly all WIC participants have a cell phone with text messaging capabilities, WIC should explore using text messaging for appointment reminders. However, the preference for text message reminders is not universal, as some participants prefer email or phone reminders instead of text messages. The Western Region WIC programs should investigate offering participants options for appointment reminders that include text messaging, email, and phone.

WIC participants are interested in receiving nutrition education via text message and email. Participants' preference of using one technology over the other is not universal, therefore agencies implementing education via email and text message should look at utilizing systems that offer participants a choice. Potential systems and campaigns to review include the National Campaign to Prevent Teen and Unplanned Pregnancy's Bedsider initiative, Text 4 Baby, and BabyCenter.com.

Based on current participant use and desired future use, Facebook appears to be a promising platform to communicate with WIC participants. For example, nutrition education and breastfeeding education and support can be provided on a Facebook page or through Facebook groups, that provide participant updates about topics related to the WIC program. In considering the use of Facebook for providing nutrition education and breastfeeding support, it is important to note that of the WIC programs who currently use Facebook pages and include WIC in the title, most have a low number of page "likes" and low interaction compared to the number of local agency participants. This may be due to 1) a lack of marketing to WIC participants about the Facebook page, 2) a lack of relevant information on the page, 3) a disconnect between WIC participants' intention and action to "like" a page or 4) concerns expressed by some participants in the focus groups related to the stigma associated with "liking" a WIC Facebook page. It is difficult

to know which of the above issues is key. Additional research is warranted to explore the use of Facebook by the WIC program and leverage participants current use of Facebook.

WIC participants want to be able to schedule their appointments, attend nutrition education classes, and check their WIC EBT balance online. Participants in both the online survey and WIC focus groups indicated that they are also interested in accessing recipes and food demonstration videos online. Additionally, WIC participants also want to be able to access the WIC foods shopping guide and be able to scan foods and find out if the item is a WIC approved food using their Smartphone while at the store, in an effort to avoid the embarrassment of holding up a line at the grocery store. Since many WIC participants access the Internet via their cell phone the Western Region should investigate the use of a mobile website or a WIC phone application where participants can receive these services online. Optimizing program videos for mobile viewing will be a necessity.

A low percentage of survey respondents showed a preference for video/skype one-on-one breastfeeding support (4%) and nutrition education (9%). However, when asked about perceived usefulness of video chat over 50% of survey respondents indicated that they thought video chat would be “very useful” or “somewhat useful” with a nutritionist, breastfeeding counselor or other WIC staff. As participants become increasingly tech-savvy the demand for this type of interaction will likely grow. The Western Region should further investigate the feasibility of using of video chat with WIC participants and the potential for connect ing participants via video chat with their local WIC agency staff.

Incorporating the use of technology will not eliminate the need to provide one-on-one WIC services. Remote places such as villages in Alaska and ITOs have difficulty accessing the Internet and cellular technology. In addition, there are many participants with limited resources and lower levels of education who do not currently access the Internet. As such, it is imperative that WIC offers multiple options when it comes to delivering WIC services.

The Western Region WIC programs will need to decide which technologies make more sense to implement for each of the services they offer. For example, this research strongly suggests to implement appointment reminders via text message and email, as well as the creation of web-based applications and mobile-based websites that allow participants to access scheduling and appointment services online. These services may be more pressing than creating nutrition education contacts via email, text messaging and Facebook, as also suggested by participants in this research project. The next stage of this project incorporates a feasibility and cost benefit analysis which will help determine and give direction related to which services should be implemented first.

Appendix A-1 WIC Participant Online Survey

Appendix A-2

WIC Participant Online Technology Survey Recruitment Flyer

YOUR OPINION MAKES A DIFFERENCE

Help WIC & You Could Win!

Tell us how you want to communicate with WIC in the future.

Go to WICsurvey.com
Take the survey between Nov. 7th and Nov. 30th
for a chance to win \$100!

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