



Wiring WIC

Technology Innovations to Strengthen the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

REPORT AND RECOMMENDATIONS

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Harvard T.H. Chan School of Public Health
DEPARTMENT OF NUTRITION

The goal of the **Wiring WIC: Health and Technology Initiative** is to explore how technology innovations and digital tools can help increase participation and retention in the WIC program to ensure that all infants and children have a fair and just opportunity for a healthy start in life.





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I. Preface

WIC participation helps reduce household food insecurity that can lead to toxic stress and improves healthful behaviors that are linked to reducing early childhood overweight. WIC also helps to ensure infants' and children's normal growth and improves access to health care and immunizations.

—American Academy of Pediatrics

[The WIC Program is] by far one of the most productive and effective programs the Senate Agriculture Committee has ever written into law.

—Senator Robert Dole

WIC has been a crucial part in raising all of my three children to be healthy and pick the right foods to help them grow and learn to their potential.

—WIC Participant

Technology has revolutionized every aspect of our lives, but has been underutilized in major public health initiatives. Such is the case with the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), a federal food assistance initiative that serves 6.2 million food-insecure pregnant, breastfeeding, and post-partum women, infants, and children up to age five.^[1] Nearly 50% of all infants born in America are enrolled in WIC. WIC provides four main benefits for program participants: 1) a monthly package of nutritious foods; 2) nutrition education; 3) breastfeeding support; and 4) counseling and referrals to other health and social services like Medicaid. Despite the valuable benefits it provides, only 53% of eligible

pregnant women are enrolled in WIC. While 98% of eligible infants are enrolled in the program, less than 25% of eligible 4-year-olds participate, reflecting a significant drop in participation by the time children age out of the program.

The goal of the Wiring WIC: Health and Technology Initiative was to explore how technology innovations and digital tools can help increase participation and retention in the WIC program to ensure that all infants and children have a fair and just opportunity for a healthy start in life. In 2017, leaders from Wiring WIC, a project of New America in collaboration with the MIT Media Lab, and the Department of Nutrition at the

Harvard T.H. Chan School of Public Health, convened a Summit of multidisciplinary experts in public health, nutrition, technology, computer sciences, engineering and design to explore how technology could better serve WIC participants by building on the transition to EBT from paper vouchers for food benefit redemption. The name of the Summit reflects the fact that when the meeting was convened in 2017, 53% of infants born in America were enrolled in WIC. We have changed the name to the 50% Summit to align with the current enrollment statistics.



The Summit produced a menu of recommendations for “wiring” WIC through a range of opportunities that leverage mobile phones, apps, social media, texting, video-conferencing, AI, machine learning, and other innovations. The goal of the Summit was to explore ways for designing WIC as a human-centered program that combines in-person and remote delivery of benefits and services. Technology solutions were identified for simplifying program administration, boosting enrollment, enhancing the participant shopping experience with apps and online ordering, providing online education, modernizing service delivery, reducing the high attrition rate from the program, and facilitating cross-enrollment with other federal and state assistance programs. When first introduced, some of the proposed technological innovations in WIC seemed infeasible, and perhaps controversial—certainly ahead of their time. However, the COVID-19 pandemic highlighted the urgency and timeliness for modernization of the WIC program and accelerated the implementation of many of the 50% Initiative’s recommendations from the 2017 Summit. This report underscores that WIC is a vital federal food assistance program, and that strengthening it with technology innovations can help the program to more efficiently, equitably, and effectively serve its participants.

Food insecurity poses a hardship for anyone, but it is particularly harmful for young children. Insufficient food and poor nutrition directly interfere with a child’s physical growth, learning, and healthy brain development.^[2] The pandemic has further increased food insecurity in America. In 2020, 14.8% of households with children were food insecure, up from 13.6% in 2019, disrupting a decade-long decline.^[1,3,4] Compared to their counterparts in food-secure households, food-insecure infants and toddlers are 90% more likely to be in poor health and 31% more likely to be hospitalized.

Beyond food insecurity, many WIC participants face a coexisting obesity epidemic.^[5-7] During the years preceding the COVID-19 pandemic, 73.6% of adults and 31.2% of children were reported to be overweight or obese. During the pandemic, American adults who reported undesired weight gain, on average, put on 29 pounds. A recent study found that childhood obesity rose significantly during the pandemic as well, with weight gain most pronounced among young children as compared to adolescents.^[8-11] Obesity is more prevalent among low-income populations and has adverse effects on the health of almost every organ system of the body. It’s linked to high rates of chronic disease including type 2 diabetes, coronary heart disease, hypertension, stroke, arthritis, and some cancers.^[12,13] Overweight and obese children are also more likely to become obese adults, and as a result of this epidemic, this generation of children is at risk for poorer health and a shorter life expectancy than their parents.^[14-15]

WIC helps ameliorate the negative health impacts of both food insecurity and obesity by preventing and treating nutritional risk in eligible women and children with supporting supplemental nutritious, healthy foods. Participation in WIC is associated with increased birth weight of babies, as well as reduced infant mortality, early entry into prenatal care, and improved intake of important dietary nutrients.^[16] Research has shown that every \$1 spent on a pregnant woman in the WIC program produces between \$1.77 to \$3.70 in Medicaid savings during the first 60 days after the infant’s birth, and helps reduce the risk of premature birth and associated costs.^[17,18] Additionally, every dollar spent on WIC more than doubles (\$2.48) the return on investment.^[19]

Yet, despite the effectiveness of the program, only 57% of eligible women, infants, and children were enrolled in WIC in 2019.^[20-21] This striking difference between those



eligible and those enrolled in WIC has worsened during the COVID-19 pandemic. While economic and food insecurity increased significantly during the pandemic, participation in WIC did not increase commensurately: WIC participation increased only 2% nationally between February 2020 and 2021, while participation in two other Federal assistance programs, SNAP and Medicaid, rose 14 and 16% respectively.^[22] WIC also struggles with a significant attrition rate from the birth of a baby to the time a child is no longer eligible for WIC benefits at age five.^[23]

Before the transition to EBT for the distribution of food benefits, WIC participants reported problems with their shopping experiences and stigma when redeeming WIC paper vouchers in the grocery line.^[24] Since EBT implementation has occurred in most states, participants report that the card-based system is certainly less conspicuous and stigmatizing than paper vouchers as it simplifies the grocery line checkout process.^[25] WIC could more fully leverage the power of technology innovations including mobile apps, web-based curricula, text messaging and other digital innovations to enhance the benefit redemption experience, fulfill the nutrition education requirements, and modernize other aspects of the program for participants, to increase participation and decrease attrition.

The need to establish a seamless, human-centered, technologically modern WIC is evident now more than ever before.

WIC has faced unprecedented challenges over the past two years, particularly in communities of color which were already at disproportionate risk for food insecurity

and health disparities. This national crisis significantly impacted the way the federal food assistance programs delivered benefits and services. Routine components of the program—like shopping in person for WIC eligible foods or attending in-person WIC clinic visits—became increasingly difficult during the initial stages of the pandemic. Barriers like transportation and fears of discrimination make it difficult for many families to seek out the services available to help meet their health and economic needs. A parallel can be drawn for WIC participants when other emergencies occur, such as hurricanes, tornadoes, floods, and fires that or the recent recall and shortage of infant formula that limit access to critical federal food assistance benefits and services

At the beginning of the COVID-19 pandemic, a potential solution—online purchasing—was not permitted in program rules, except within certain pilot online ordering programs. The waiving of certain “in-person” requirements for WIC program eligibility during the pandemic—like registration, re-certification, and health checks for infants—allowed some aspects of the program to move online as a result of COVID-19. The COVID-19 crisis and its difficult circumstances have challenged USDA and WIC state agencies to accelerate implementation and explore novel strategies to enroll participants and deliver food benefits and services. Historic investments by Congress in strengthening social safety net programs for low-income families have already paid dividends: after the Child Tax Credit monthly payments were enacted, adults who reported that their household didn’t get enough to eat declined from 10.7 million to 7.4 million, and the number of those adults who said their children didn’t have enough to eat decreased by 2 million.^[26] This significant improvement underscores the impact that government action can have on improving the nutrition security of families. The need to establish a seamless, human-centered, technologically modern WIC is evident more now than ever before.

Studies have shown that the majority of WIC participants have access to the internet on mobile phones and/or computers. An estimated 97% of low-income adults in the United States have access to a mobile phone, 83% have access to a smartphone, and about two thirds of smartphone owners have used their phone in the past year to look up information about a health condition. These statistics highlight the significant opportunity to improve health and nutrition through online and mobile

resources.^[27–28] People’s increased reliance on technology during the pandemic has made modernizing WIC more timely and important.^[29] Mothers who use technology including mobile phones and the internet are now parenting and entering the WIC program. Consequently, WIC agencies have begun exploring innovative approaches that utilize new technology and remote service delivery models to provide clients with enhanced services.^[30]

Now is the time to extend the availability of online and mobile options for shopping, education, and health referrals in the WIC program. Whether through apps that track food purchases and nutritional content or personalized text messages containing appointment reminders, tips about nutritional choices and child development or online ordering, information technology is now playing an important role in innovating WIC as it will continue to respond to participant and agency needs during the COVID-19 pandemic and in the years ahead. Additionally, such innovations can also help transform the nutrition landscape in communities more broadly by reshaping retailers’ food stocking patterns and making nutritious food available to more Americans, WIC-eligible or not.

This report presents the recommendations from the 50% Summit and findings from a scientific literature review on strategies for applying technology to strengthen the impact and effectiveness of WIC in the Digital Age. It also presents actions that have been taken in response to the challenges to the program presented by the COVID-19 pandemic. The report reviews the history and operations of the WIC program, describes the current status of WIC EBT implementation, and considers opportunities for public health research utilizing WIC EBT and app data.

Moreover, this report explores how new innovations with mobile phone app features such as food scanning, data collection, nutrition education, and child development tips have the potential to increase enrollment and improve retention in this vital food assistance program that serves nearly half of infants born in America.^[20]

The overall technology landscape of WIC has made significant leaps since the 50% Initiative Summit was convened in 2017. While the uptake of these innovations across the 89 WIC state agencies has progressed at different rates, the overall technology landscape of WIC has significantly changed since the Summit was convened. Measures taken during the pandemic accelerated the application of technology to achieve a more resilient program that can provide WIC services to families during national and local emergencies when people often need these resources the most. As such, an additional goal of this report is to mark the progress that has been made while recommending additional pathways for technology innovation, so that all 89 WIC state agencies can achieve a program that works for new generations of families.


A culture of health in America requires that everyone has access to the resources they need to flourish in their communities. The Wiring WIC: Health and Technology Initiative supports the belief in a future where technology can help fundamentally modernize this federal food assistance program and help reduce food insecurity and obesity for millions of low-income families in the United States. Through the recommendations of this initiative, we hope to catalyze the design of innovative ways to better nurture Americans in need, including nearly 50% of all infants born in the United States enrolled in WIC—an essential part of our nation’s future.



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II. Background



Piloted in 1972 and established officially in 1974, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a critical federal assistance program that provides access to nutritious foods to supplement diets, nutrition education, and health care referrals for low-income pregnant, breastfeeding, and postpartum women, infants, and children up to age five who are medically or nutritionally at risk.^[31] In FY 2020, WIC had an annual budget of \$4.9 billion and provided food assistance to 6.2 million participants, including almost half of all infants born in America.^[32]

For nearly five decades, WIC has served as a safety net program for low-income families with infants and children to alleviate hunger and improve the health of participants. It is also one of the few federal nutrition assistance programs that monitor the health of enrollees and as such, has made significant contributions to advancing research on maternal and child health.

During the COVID-19 pandemic, many participants of federal assistance programs like WIC struggled to access benefits when essential components of the program like shopping in person for eligible foods and enrolling or attending in-person recertification clinic appointments

to maintain eligibility became nearly impossible due to lockdowns, food supply shortages, and the closure of agency clinics. Minority participants who were already at a disproportionate risk for food insecurity and health disparities were especially affected by these barriers, due to the above-mentioned difficulties, lack of transportation, work responsibilities, child care issues, and fears of discrimination.^[30] As federal programs faced challenges, the need for WIC benefits rose sharply: it is estimated that as many as 45 million people, including 15 million children, experienced food insecurity in 2020.^[4] Childhood obesity rates also rose during this time period.^[33]

In March 2020, WIC agencies began rescheduling appointments and delivering services remotely, which presented unprecedented challenges for WIC agencies that were required by federal law to conduct certain program operations in person. The Families First Coronavirus Response Act of 2020 included waiver authority of statutory physical presence requirements and other regulatory barriers to accessing the program amid the public health crisis. State WIC agencies swiftly applied for and received critical, though conditional, waivers necessary to adapt services, including waivers of the physical presence requirement for new participants.^[30] Though the waivers allowed WIC providers to adapt and provide uninterrupted services for families remotely, their short-term nature has left WIC participants, vendors, and staff with uncertainties as USDA decides whether to make this flexibility permanent. From this public health crisis now comes an opportunity to redesign how WIC provides its services, and to apply technology to strengthen the program during the pandemic and in the years that will follow. WIC technology—the electronic tools that are or can be used for WIC program administration and service delivery to clients—can help

reduce inequities that prevent access to the program by offering more ways to engage participants and meet their diverse needs. We live at a time when technology can help connect people to services across communities and around the world, but these tools and approaches have historically been underutilized by WIC.

WIC has proven to be one of the most successful and cost-effective nutrition intervention programs in the U.S. and is especially important today. In 2019, 10.5% of households in America were food insecure, meaning they did not always have access to enough food for all family members to live active, healthy lives.^[6] During 2020, the USDA estimates that the overall prevalence of food insecurity remained unchanged, yet in households with children, food insecurity rose by 1.1%. Approximately 45 million people, including 15 million children, may have experienced food insecurity in 2020 during the COVID-19 pandemic.^[34]

Food insecurity and poverty are associated with significant social, economic, and health consequences. Children living in poverty are more likely to experience adverse health conditions, including increased infant mortality; more frequent and severe chronic diseases such as asthma; poorer nutrition and growth; less access to quality health care; lower immunization rates; and higher rates of obesity and its complications.^[35] Children growing up in impoverished conditions are more likely to have lower academic achievement and continue to live in poverty into adulthood.^[36]

A modern paradox has also emerged in the U.S. over the past four decades with a co-existing obesity

epidemic (see Figure 1). Since the mid-1970s, the U.S. has experienced a dramatic rise in obesity, with an estimated 73.6% of adults and one in five children overweight or obese based on body mass index (BMI).^[8,9,37] The highest rates of obesity in the country are among low-income Americans, many of whom are food insecure. The physical, emotional, social, economic, and national security consequences of food insecurity and obesity are serious and insidious.

Obesity has adverse effects on the health of almost every organ system of the body, and is linked to high rates of chronic disease, including type 2 diabetes, coronary heart disease, hypertension, stroke, arthritis, and some cancers.^[13-15] Over the past 30 years, childhood obesity rates have more than tripled, meaning that this generation of children may not be as healthy or live as long as their parents, with children from low-income families experiencing a far lesser reduction in obesity rates compared to those from more affluent families.^[15,38,43] The onset of heart disease, type 2 diabetes, and pre-diabetes has skyrocketed among youth and adolescents, and obese children are more likely to have risk factors for cardiovascular disease, including high blood pressure or elevated cholesterol levels.^[39-42]

To respond to the obesity epidemic in America, Congressional legislation has addressed the need to improve nutritional health among people enrolled in federal food assistance programs. For example, WIC was revised in 2009 to provide a defined food package that aligns with the Dietary Guidelines for Americans.^[44]

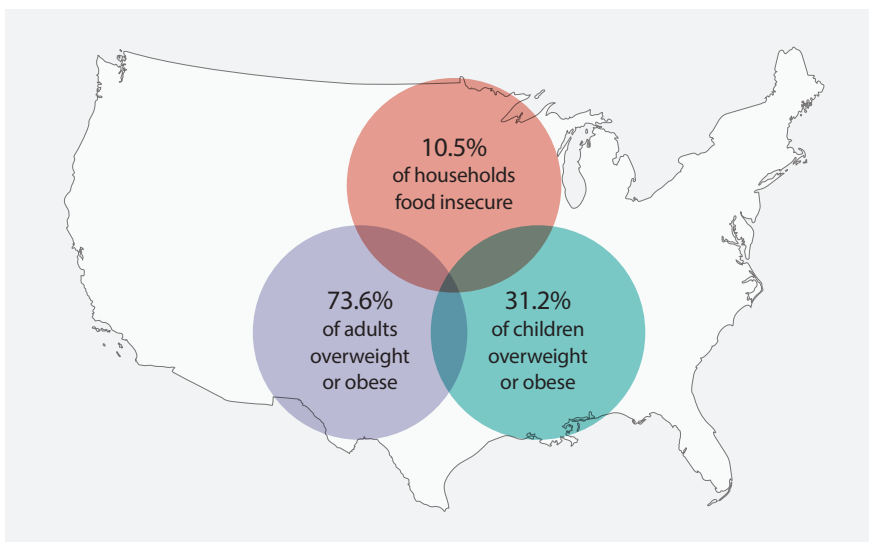


Figure 1:
The Food Insecurity and Obesity Paradox

The paradoxical association between food insecurity and obesity rates has been attributed to the high caloric density of food items consumed by food insecure populations, lack of nutrition education, and reduced access to healthy and affordable food, among other factors.^[6,8,9]



National WIC Eligibility, 2019

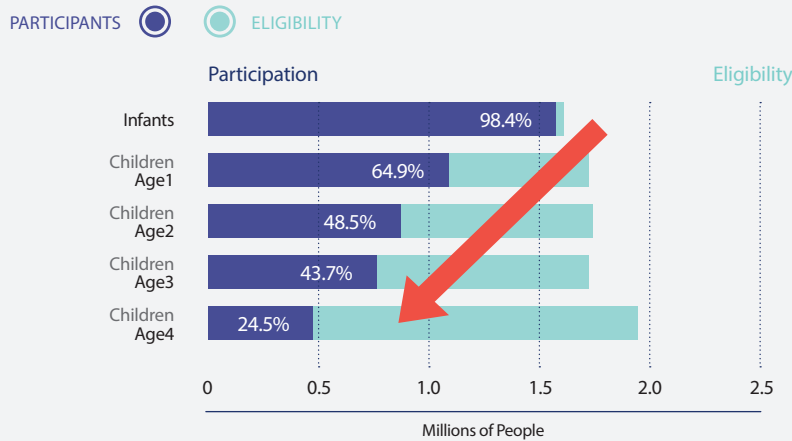


Figure 2:
Steep Decline in Children's WIC
Participation from Birth to Age 5


The data indicates a decline in WIC coverage over time, illustrating the steep attrition of infants and children from the WIC program from the time they are born to their fifth birthday.^[20]

Obesity and its co-morbidities also present a significant financial burden to the health care system, bringing the total annual cost of obesity-related health care expenses in the U.S. to an estimated \$190 billion.^[45]

In the face of these epidemics, research has demonstrated positive health outcomes for pregnant WIC participants and their infants, including reductions in pre-term births, fewer low birth weight babies, lower infant mortality rates, and a greater likelihood of receiving prenatal care.^[16] Participation in WIC shows a reduction in obesity, hunger, and malnutrition in children ages 2–4.^[46] Other positive health outcomes associated with WIC participation include lower rates of child abuse and neglect, higher rates of breastfeeding initiation, less iron deficiency anemia in children, and improvements in both children's access to dental care services and reading scores.^[16, 46–48] Significantly improved rates of childhood immunization and regular medical care are also associated with WIC participation.^[16] Children who receive WIC benefits demonstrate improved intellectual development, making them less likely to fall behind in school,^[16] All of these positive outcomes translate to healthier children and families, and reductions in social service usage and health care costs. Each dollar invested in WIC saves an estimated \$1.77 to \$3.17 in Medicaid expenditures.^[17, 18, 49] Through distribution of

food package benefits, WIC is also helping to support the work of our nation's farmers, food manufacturers, and grocery store vendors.^[17, 50]

Despite its many achievements, WIC still faces significant challenges. While the number of people eligible to participate in WIC has risen since 2012, the participation rate in the program has declined since 2010.^[51] In 2019, only 57% of people eligible for WIC nationwide were enrolled.^[20] Despite children remaining program eligible until age five, only one-quarter of eligible four-year-old children participate in the program—an attrition rate that can certainly be improved upon (see Figure 2).^[20] A 2010 USDA WIC attrition study, which was conducted when paper vouchers were the only available way to access food benefits, 26% of households exiting the program reported participation required too much time and effort for the value of benefits received; another 10% citing scheduling and transportation challenges.^[52] Participants also reported difficulties in identifying eligible foods on their family's food prescription as WIC foods are often inconsistently labeled and identified by retail vendors, and many felt they faced stigma or judgment when presenting their WIC vouchers at checkout. Participants also reported long waiting times for clinic appointments and scheduling problems



for their WIC clinic visits. To remain enrolled in the program, participants in most states were required to have in-person nutrition education and recertification appointments; it has only been recently—in large part due to the pandemic and waivers provided by the USDA—that WIC agencies have allowed online completion of requirements like enrollment, recertification appointments, nutrition education, and issuance of benefits. This move to virtual assistance has provided WIC agencies with greater flexibility on how their program components are delivered. Even though this switch to remote accessibility and services have been received positively by WIC families, it remains unclear if 1) the USDA will make these waivers permanent and 2) if WIC agencies have the resources and expertise to transition to a permanent hybrid in-person/virtual model. A permanent implementation of WIC services online will have many benefits but requires a significant amount of funding and technological expertise.

The pandemic highlighted the importance of applying technology to ensure a resilient WIC program that can provide services to families during national and local emergencies when they need it most. WIC must also continue to evolve to better reach today's diverse Millennial parents—the tech and social media-oriented generation born between 1981 and 1996 that comprises a quarter of the U.S. population and 82% of new mothers in America.^[53-55] According to a 2021 study by the Pew Research Center, 100% of 18–49-year-olds and 97% of all low-income adults owned a mobile phone.^[56] Only 57% of the lowest income category (less than \$30,000 annually) had broadband internet access at home, and 27% were most likely to report only accessing the internet via a mobile phone.^[28, 29] Integrating information technology (IT) tools to enhance WIC's accessibility, appeal, and ease of participation should appeal to Millennial and Gen Z parents as a valuable and relevant source of support with both in person and tech enhanced services, replacing some of their experiences with WIC as a program encumbered by barriers, stigma, and navigation difficulties. Thirty percent of the millennial generation is

now parents, with this percentage expected to rise. WIC participants should be able to easily incorporate program participation into their busy lives. As demographics of parents shift to more digitally oriented and more diverse generations, WIC must continue to adapt and innovate to meet their needs and implement technologies to be linguistically and economically accessible. They should be made available in participants' native languages and data usage costs must be kept to a minimum.^[47]

WIC must continue to evolve to better reach today's diverse Millennial and Generation Z parents who are technology and social media-oriented.

Fully harnessing the powerful tools of information technology can facilitate a new era for WIC in the Digital Age, ensuring it remains a critical resource for food, breastfeeding guidance, nutrition information, education, and referrals to health and social services for low-income families across the nation. Using digital strategies for operations like enrollment, recertification of participants, appointment scheduling, food benefit issuance, nutrition education, breastfeeding support, online ordering, delivery options, and child development education will help families participate in WIC more easily, redeem their benefits more efficiently and receive important education and resources more flexibly. Such improvements can help reduce the challenges that participants have experienced in the program and replace them with modern, user-friendly solutions.



III. Wiring WIC: The Health and Technology Initiative for Nurturing WIC's Future



The Healthy, Hunger-Free Kids Act of 2010 required all WIC state agencies to transition from paper vouchers to EBT for distribution of food benefits by October 2020.^[20, 57] EBT is a mechanism for shopping that contains participant's food prescription on a debit-like card, a format far less complicated and cumbersome than paper vouchers. The elimination of paper vouchers by most WIC agencies means that participants can now redeem food items at multiple times, instead of using one voucher at once. However, EBT cannot fix all the problems with the shopping experience, nor does it begin to solve issues surrounding mandatory in-person enrollment, education and re-certification requirements. Building on EBT implementation, high-impact human-centered design and technological innovations in WIC can enhance its service delivery and education model to meet young families where they are, help overcome program participation barriers, and position WIC to respond to service delivery disruptions like national emergencies, as occurred during the COVID-19 pandemic.

The Wiring WIC: Health and Technology Initiative, a project of New America in collaboration with the MIT Media Lab and the Department of Nutrition at the Harvard T.H. Chan School of Public Health, explored ways to achieve this goal. The 53% Summit was named

to reflect the fact that when the conference was convened in 2017, 53% of all infants born in America were beneficiaries of WIC annually. Today, nearly 50% of infants born in the United States are enrolled in the program, so we have changed the name of the initiative to reflect current statistics. The 50% Summit convened a multidisciplinary team of public health, nutrition, technology, and design experts across public and private sectors who conducted the following activities:

- Prepared a comprehensive scientific literature review of technology use in WIC.
- Convened a national summit with multidisciplinary experts and WIC agency directors and participants to explore strategies for redesigning WIC to better meet the needs of beneficiaries, especially in the areas of program enrollment and retention.
- Produced recommendations for creating a technology-driven, user-centered WIC experience.
- Examined opportunities to leverage innovative technologies to enhance access, efficiency, education, and other services in WIC to enhance the client experience as well as increase program participation and retention.
- Established a website (www.WiringWIC.org) that functions as a resource hub for ideas, conference and symposium materials, as well as information related to WIC technology innovations.
- Held a Virtual National Symposium convened by New America in collaboration with the Department of Nutrition at the Harvard T.H. Chan School of Public Health and the MIT Media Lab to present the project's recommendations to stakeholders and policymakers.

IV. The 50% Summit

On September 5–6, 2017, in collaboration with the Massachusetts Institute of Technology (MIT) Media Lab and the Department of Nutrition at the Harvard T.H. Chan School of Public Health, New America convened more than 60 multidisciplinary participants from technology companies, public health practitioners, researchers across disciplines, major grocery and online retailers, futurists, designers, policymakers, engineers, and current WIC participants and agency directors to create a menu of recommendations for strengthening WIC with technology innovations as the program transitioned from paper vouchers to electronic benefit transfer (EBT) cards for food benefit distribution. The broad spectrum of experts and stakeholders who attended the 50% Summit adopted a moonshot approach to reimagining what was possible for WIC in the Digital Age by engaging in working group sections designed around ‘out of the box’ thinking.

The 50% Summit provided an environment to foster cross-sector innovation, create partnerships, and build networks that leveraged the power of information technology and social media to explore innovative digital approaches beyond the food benefit redemption experience to promote nutritional health, prevent obesity, provide information about child development for WIC beneficiaries, collect data for research and program improvement, and ways to harmonize with other federal assistance programs in the future.

During the first 50% Summit panel, speakers set the stage by (1) providing background information on WIC; (2) describing the legislative mandate for transitioning from paper vouchers to EBT for food benefit redemption; (3) illustrating how technology can be integrated into government programs to improve their efficiency and user-friendliness; (4) discussing health and nutrition

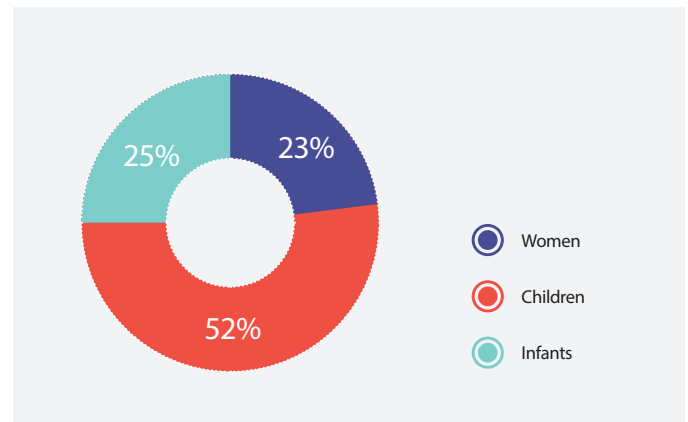


Figure 3:
Percentage of WIC Participants by Category

In 2020, over three-quarters of all WIC participants were infants and children.^[1]

disparities in America; (5) highlighting the potential for digital education in nutrition and child development within the program; and (6) envisioning the future of food production in the 21st century. Also on a panel at the Summit were WIC beneficiaries who spoke about some of the barriers they have encountered in the program and their recommendations for improvements. WIC state directors also contributed their experience and insights.

Following the introductory panel, ten working groups were formed with representation across all the different fields of expertise represented at the conference. To provide the client's perspective, a WIC participant or clinic staff member was a member of each group. These group sessions served to incubate new ideas, design innovations, and produce recommendations to strengthen the WIC program.



Conference attendees underscored the fact that given the millennial generation's digital connectedness, technology could enhance the overall WIC experience, especially when combined with the traditional in-person service delivery model that has been critical to the success of the program. Recommendations from the 50% Summit included designing new models for accessing WIC services and building more networked WIC communities with mobile technology, text messaging, online ordering, mobile pay, and other features. Though the barriers and challenges to implementation of some of the ideas generated at the Summit were acknowledged, the goal of the meeting was to look ahead to what the WIC program could accomplish in the years and decades ahead. This creative approach resulted in significant idea generation from the experts who attended, and is reflected in the broad range of recommendations

listed below, which are meant to imagine what WIC can achieve with technological innovation now and in the future serving as a vital program for reducing food insecurity in America,

As previously noted, the 50% Summit was convened in 2017, well before the COVID-19 pandemic significantly impacted our society and the WIC program. Despite the myriad problems caused by the pandemic, many of the recommendations from the 50% Summit for strengthening WIC have since been implemented to maintain program operations and service delivery during the disruptions caused by the pandemic. The transition to a more modern, user-friendly, digitally-enabled program is essential for WIC to fulfill its mission of reducing food insecurity and promoting health in the United States.



V. How WIC Works

The WIC Participants

In 2019, WIC covered 98.4% of eligible infants, 44.8% of eligible children under the age of 5, and 52.3% eligible pregnant women.^[20] WIC serves a diverse group of families: 59.5% of WIC participants are Caucasian, 22.3% are African American, 6.8% are American Indian or Alaskan Native, and 3.6% are Asian or Hawaiian/Pacific Islander, while Hispanic/Latino participants accounted for 40.7% of the WIC population.^[20] Approximately 25% of WIC participants were women (Figure 3). A significant percentage of WIC mothers currently enrolled in the

program were born between 1980 and 2000.^[52] These women are part of the digitally connected Millennial generation that comprises 25% of the current U.S. population.^[52] One in four Millennials are parents, and 43% are non-white.^[52] In 2019, the majority of WIC parents (84.1%) were aged 18–34. Only 2.3% were 17 years or younger and 13.5% were 35 years or older.^[58] Since 2010, the WIC coverage rate of eligible population significantly declined but began increasing in 2015 (Figure 4).

WIC Coverage Rates: 2005–2019

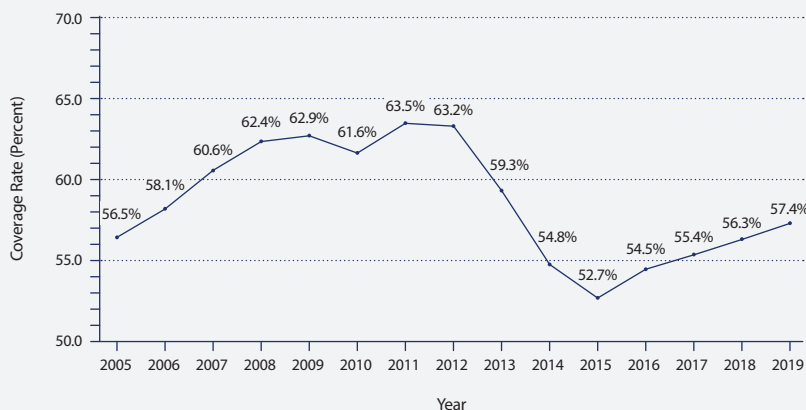


Figure 4:
Trends in WIC Coverage Rates

The WIC coverage rate is defined as the ratio of the number of WIC participants to the number of individuals eligible for WIC. Total coverage across all categories of eligibility increased from 57% in 2005 to a high of 64% in 2011.



Approximately 77% of WIC participants also receive benefits from another federal assistance program, such as the Supplemental Nutrition Assistance Program (SNAP), Medicaid, or Temporary Assistance for the Needy (TANF).^[60] To be eligible for WIC, applicants must meet four main risk requirements: categorical, residential, income, and nutritional.^[61]

The categorical requirement limits eligibility for participating in the WIC program to women who are pregnant, postpartum, or breastfeeding, have infants up to age one, or children up to age five. Applicants must live in the state in which they apply, and in areas where WIC is administered by an Indian Tribal Organization (ITO), participants must meet the residency requirements

established by their ITO. Additionally, applicants must have an income at or below 185% of the U.S. Poverty Income Guidelines or the state agency's income standard. Individuals may also be automatically income-eligible based on their participation in certain other federal assistance programs like SNAP, Medicaid, or TANF. Lastly, the nutritional risk requirement for eligibility in the program must be determined by a WIC nutritionist or by reviewing health data from a medical provider, at no cost to the applicant. Indications of nutritional risk involve evidence of medical or dietary-based conditions such as anemia, underweight, history of a poor pregnancy outcome, and poor diet.^[62] WIC participants are typically certified for six months of program benefits; at the end of the six months, they must recertify.^[62]

The WIC Program: How it Works

WIC is the third largest federal nutrition assistance program behind SNAP and the National School Lunch Program. In contrast to other USDA nutrition assistance programs, WIC is required by the Congress to provide four major benefits for program participants: nutrition education, referrals to health and social services, breastfeeding support, and a monthly package of supplemental healthy foods high in nutrients that tend to be deficient in the diets of the low-income target population. WIC works through partnerships between federal, state, and local agencies. Each year, the Congress allocates a specific amount of USDA funding for WIC administrative operations, nutrition services, and food purchasing. USDA's Food and Nutrition Service (FNS) provides funding to the 89 WIC state agencies. FNS issues regulations, monitors compliance, conducts studies of program evaluations, and provides technical and financial assistance for food benefits and the administration of other WIC services.

The 89 WIC state agencies that provide nutrition and education services include the 50 geographic states, 33 Indian and Native American tribal agencies (also known as ITOs), 5 U.S. territorial governments (i.e., American Samoa, Guam, Northern Marianas, Puerto Rico, U.S. Virgin Islands), and the District of Columbia. These WIC agencies

are responsible for all program operations within their jurisdiction, distribute federal funding for the delivery of WIC services, and operate the programs within the broad regulatory guidelines set by the USDA/FNS. The state agencies have considerable operational freedom, for example, choosing specific brands, kinds, and package sizes for their list of WIC-approved food products.

The WIC program provides its services through 1,900 local agencies in state and county health departments and through some public and private non-profit health and human services organizations. Each local agency is comprised of multiple easily-accessible clinic sites, totaling over 10,000 WIC sites nationally. Across the country, WIC clinic staff members process enrollment, prescribe food packages, provide nutrition education, offer breastfeeding support, conduct health screenings, and refer participants to other health and social services.

The WIC Food Prescription

The supplemental foods provided under WIC are high in nutrients that tend to be lacking in the diets of the target population, including iron, calcium, and vitamins A and D. Unlike other federal assistance programs such as SNAP, the WIC food benefit is based on a food type and quantity (e.g., units or ounces) rather than a dollar amount, with the exception of Cash Value Voucher/Benefits (CVV/CVB), a set amount of dollars to purchase fruits and vegetables. CVV is paper voucher based, while the CVB is EBT based. Each WIC state agency has the authority to determine specific food prescriptions and authorized products within the broad federal guidelines issued by USDA. WIC participants receive the food prescriptions with the maximum allowable amount to be redeemed within a certain period, usually one month. All benefit information is stored or linked to their EBT cards. WIC participants can visit any WIC-authorized vendors to shop for any WIC-eligible foods on their prescriptions, and purchase these foods with their EBT cards.

In 2009, the WIC food packages were modified significantly for the first time to align with the USDA Dietary Guidelines for Americans (DGAs).^[45, 63] This adjustment reduced WIC monthly allowances for milk, juice, and eggs, and added products like multi-grain foods and fruits and vegetables. In 2014, the USDA issued a final administrative rule to mark the completion of the WIC food package revisions which begun in 2009. The new food package incorporated CVV for the first time, which provided a \$8 cash benefit for children and \$11 cash benefit for women to purchase fruits and vegetables. State and local WIC agencies have the discretion to decide which items are included under “fruits and vegetables”; some WIC agencies opt to include canned produce, while others only allow fresh products.

In 2017, the National Academy of Medicine convened an expert ad hoc committee to conduct a comprehensive evaluation of the WIC food packages and made recommendations for the program to: 1) increase CVV for fruits and vegetables, whole grains, and seafood; reduce juice, dairy, peanut butter, legumes, and infant foods to increase balance among food groups; 2) increase the amount of whole grains and yogurt to reduce the amount of added sugars from milk; and 3) add more choices to the 2009 WIC food packages.^[62] The most recent version of the 2020—2025 Dietary Guidelines for



Americans (DGAs) includes dietary recommendations based on life stages, and addresses the nutritional needs of different age groups. Important for WIC, the updated DGAs provide guidance for pregnant and lactating women, as well as for women raising infants and young children (0–24 months). However, the recommendations from the 2017 NASEM report and the 2020–2025 DGAs have yet to be adopted.^[64, 65]

Along with providing healthy foods and nutrition education to 6.2 million participants in the U.S., an unanticipated benefit of the WIC program has been its positive impact on the country’s food environment.^[20] For example, when grocery stores stock the nutritious foods that are key ingredients of the WIC food packages, these products are also available for purchase by anyone who shops at that particular store.^[50] As a result, WIC is helping improve the diets of many people in the community and may potentially contribute to reducing the prevalence of obesity by increasing access to healthy foods in retail environments where they might not have been previously available.^[46, 50]



VI. How WIC is Supported

The federal government supports 100% of food and administrative costs for WIC. The amount is appropriated by Congress at the beginning of each fiscal year. After receiving its Congressional appropriations, the USDA/FNS provides each state agency with a grant to support the operation of its program.

The annual WIC appropriation has two major components: 1) funds to purchase food and 2) funds to support for nutrition services and administration. In FY 2020, WIC's budget was \$4.9 billion dollars.^[32] Other "special" administrative funds provided in Congressional WIC appropriations include operational adjustment (OA), technology, EBT, infrastructure, and demonstration project grants. OA grants are included in the Nutrition Services and Administration (NSA) appropriations and are allocated to state agencies based on the results of competitive grant applications. Additional appropriations are allocated for specific purposes, such as for

management information systems (MIS) or EBT projects. State agencies apply for these funds through Advance Planning Documents, or competitive grant applications.

In 2021, as part of President Joseph Biden's ARPA, an additional \$880 million was allocated for WIC, in which \$490 million was directed towards increasing food benefits, including the aforementioned cash value benefit (CVB), which is equivalent to CVV in the EBT era, for the purchase of fruits and vegetables. The cash value benefit (CVB) was temporarily raised to \$35 a month until September 2021. It was raised again for each WIC participant group through December 2021 to \$24 for child participants, \$43 for pregnant and postpartum women participants and \$47 for breastfeeding women participants.^[64] The remaining \$390 million was allocated for WIC outreach and modernization, including improvements to WIC technological infrastructure and innovation through 2024.^[66]





VII. eWIC: Transitioning from Paper Vouchers to an Electronic Benefits Transfer System (EBT) for Food Benefit Distribution

Since the 1980s, the U.S. federal and state governments have pursued the implementation of EBT systems to replace paper instruments for the delivery of federal food assistance benefits in programs like WIC and SNAP. With either a magnetic stripe or a chip, EBT cards allow recipients to authorize the transfer of their government funds from a federal to a retailer account to pay for the food products received. Moreover, an EBT card offers a discreet and less stigmatizing way of purchasing food products, compared to the programs' prior use of paper vouchers.

The Healthy, Hunger-Free Kids Act of 2010 required all 89 WIC state agencies to transition from paper vouchers to EBT for the issuance of participants' food benefits by October 1, 2020. As of March 2022, 77 WIC agencies have fully implemented EBT and 12 are currently in the process of transitioning to EBT.^[67] An agency that is implementing EBT might be in the piloting stage or have most, but not all, of its clinics using the technology. An agency with full implementation has completed a statewide rollout of EBT, with all participants using EBT instead of paper vouchers (see Figure 5). The new WIC EBT system and card are often referred to as "eWIC."

For those agencies that have transitioned into the EBT system, WIC beneficiaries are provided with item and quantity-specific "food prescriptions" on their EBT cards, which they can redeem at participating retailers. As compared to the paper voucher system, the WIC EBT system allows WIC food benefits to be prescribed for a longer time, usually three months. While food benefit allocations still expire at the end of each benefit cycle, usually a month, families can now spread their food prescription purchases over the course of a cycle. This improves purchasing flexibility in contrast to the paper voucher system, where participants had no choice but to redeem all the cycle's benefits at one time.

To make a food purchase at a grocery store or other authorized vendor, WIC participants swipe or insert their EBT cards at the payment terminal in the store checkout lane, enter the unique PIN number associated with their EBT cards, and complete the transaction. The debit-like transaction provides WIC participants more discretion and, since there are no paper checks to reconcile for purchased products, also reduces the burden on WIC staff and vendors.

Several studies have demonstrated multiple ways in which EBT improves and reduces the cost of the delivery of federal food assistance.^[68] For vendors, EBT eliminates the expense of returned paper check fees while decreasing cashier-training costs.^[68] For participants, EBT measurably increases the direct redemption of food benefits, helps reduce the stigma associated with the shopping experience, and decreases checkout transaction time.^[68, 69] For agencies, it eliminates millions of dollars of expenses for administrative costs associated with the paper voucher system, and helps to significantly reduce expensive errors and accidental overcharging for some food items.^[68] However, it should be noted that EBT processing could be associated with increased costs in system implementation and maintenance.

Additionally, eWIC data provides accountability and transparency about food inventory and purchasing, allowing state agencies to more effectively address fraud and abuse and improve service delivery locally. In states like California, the use of interactive data visualization software has allowed WIC staff to draw powerful insights into user shopping and purchasing patterns. EBT also provides stores with lane-specific WIC transaction information that helps vendors respond to potential compliance and customer service issues related to their staff.

While the 2020 mandate focuses on updating agency



management information systems (MIS) and transitioning to the EBT for food benefit distribution, it also presents an important opportunity to look beyond EBT and explore how a range of digital innovations can maximize WIC's health benefits. As mentioned earlier, over 96% of 18–49-year-old and 85% of all low-income adults own a mobile phone.^[27, 29] This statistic alone highlights the need to provide smartphone-based apps and mobile-friendly websites for the WIC population, since many eligible participants primarily access the internet using their phone.^[28, 29] Ensuring education and resources are accessible through mobile phone apps and texting is increasingly important for the relationships families have with the federal and state services for which they qualify.^[70] Uploading certification documents online and facilitating cross-enrollment in other federal assistance programs is a necessity for effective programming and the provision of a seamless system of benefits to eligible Americans.

However, there are factors like constraints on mobile storage space and plan limits on data usage, text messaging, and Wi-Fi that may prevent WIC participants from accessing services.^[70] This is why expanding access to broadband is critical in the infrastructure of underserved communities. If WIC is to attract and retain participants from the internet and social media oriented Millennial and Gen Z generations, now is the time to engage stakeholders from across the public and private sectors to leverage cutting-edge technology to modernize the WIC program.^[70, 71] The good news is that in recent years, especially during the COVID-19 pandemic, these kinds of innovations are being adopted to strengthen WIC. But it should not take a national public health crisis to innovate such a critical program and that is why WIC must continue to integrate both in person and virtual services now and in the years ahead.

WIC EBT Activity — April 2022

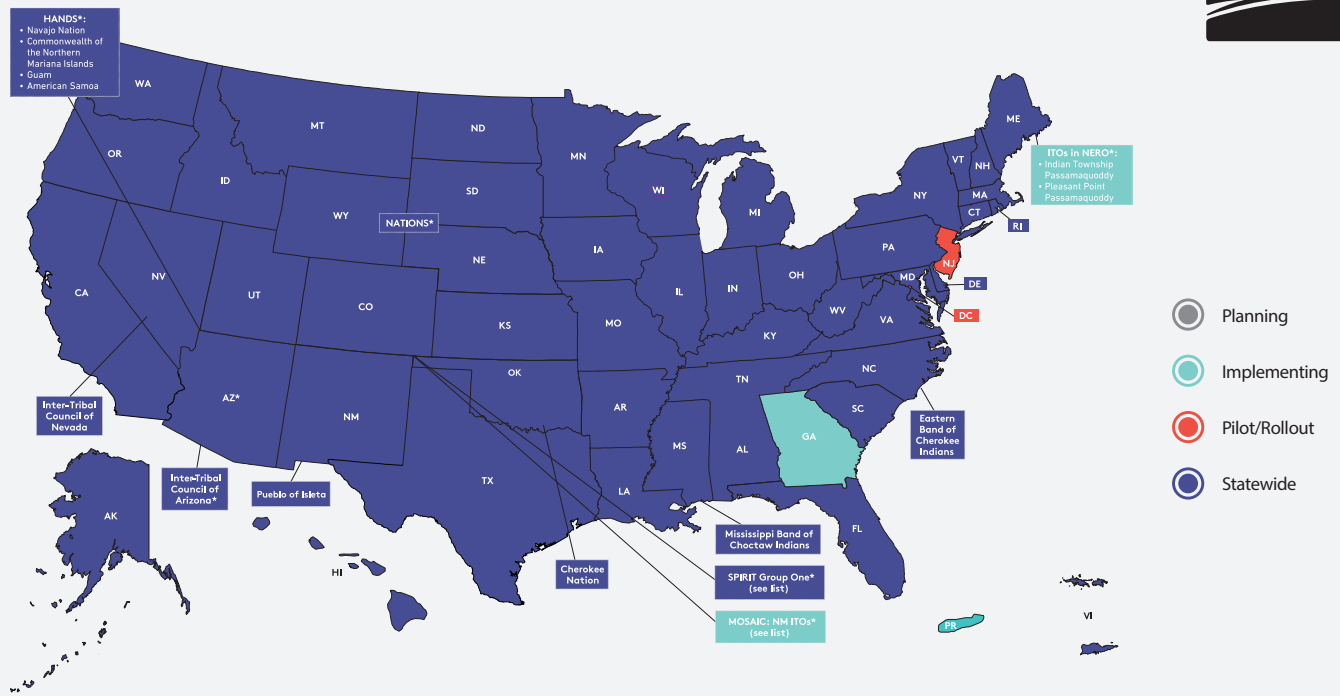


Figure 5: WIC EBT Status Map

As of March 2022, 77 WIC agencies have implemented EBT statewide. All 89 WIC state agencies were required to transition from paper vouchers to EBT for the issuance of participants' food benefits by October 1, 2020. Source: <https://www.fns.usda.gov/wic/wic-ebt-activities>



VIII. Wiring WIC Initiative Recommendations: Challenges and Opportunities

The goal of the Wiring WIC: Health and Technology Initiative was to explore how applying human-centered technology solutions can simplify administrative work, customize the program for all participants, boost enrollment of eligible families, and help reduce the program's high attrition rate. Since meaningful staff-client relationships are still at the core of the WIC experience, attention to technology infrastructure importantly frees up clinic staff to focus on strengthening their one-on-one relationships with program participants.^[72]

It's evident that the significant decline in WIC participation rates from infancy to age 5 is a strong signal that the program operations require a redesign to increase enrollment and retention.^[20] Program beneficiaries often participate in WIC long enough to access costly infant formula benefits and obtain breastfeeding counseling, but once children begin consuming solid foods, the program appears to be less valued for reasons we have described above: stigma during shopping, difficulty in finding WIC eligible foods in the store, cumbersome enrollment and certification processes, penalties for not complying with program requirements, and mandatory in-person clinic visits that are often accompanied with long waiting times.^[73] For example, to receive benefits and remain enrolled in the program, beneficiaries are required to attend mandatory, in-person clinic appointments for blood work analysis or anthropometric screening; barriers like access to transportation lead to difficulties keeping these appointments.^[73] Families with young children may not be motivated by WIC's benefits in the face of these challenges.

Improvements in program operations—how food benefits are delivered and nutrition education services are provided—could potentially reduce some of the barriers that have contributed to WIC's high attrition rate. Indeed, because of the USDA's waiving of in-person requirements for WIC appointments during the pandemic, WIC staff are receiving positive feedback about the potential of virtual appointments and certification as they lower the barriers to participation for WIC families.

The implementation of web-based resources for WIC navigation is emerging, but the availability of these resources remains a work in progress, and depends on the varying levels of technological infrastructure available to state agencies. This includes tools like state-based web pages or mobile applications, by which beneficiaries can learn about WIC, check benefit balances, determine eligibility, access local clinics and vendors, and comprehensive nutrition education modules online. According to a 2020 report from the National WIC Association, only five WIC agencies currently offered a single website where one can access these services; instead, many agencies still operate separate websites for discrete functions (i.e., an application website, a benefit monitoring website).^[74] Ensuring WIC agencies can offer all their services in one centralized virtual location is of paramount importance.^[74] A study assessing preference for web-based technology apps within WIC has shown that most participants are interested in having web- and app-based features for facilitating their WIC experience.^[55]



Surely digitization of some services will enhance the WIC experience by keeping participants engaged and eliminating barriers like transportation, as well as helping agencies overcome staffing shortages. For example, mobile phone shopping apps have been found especially helpful for WIC participants. A smartphone app for delivering nutrition education to WIC families of preschool-aged children was rated highly by mothers due to its usability and benefits.^[75] A review of 17 mobile apps available to WIC participants found the most positive reviews were for apps that assisted participants with real-time shopping management, such as barcode scanning of foods for WIC eligibility, and benefit balance checking features. Other studies have shown a positive association between the WIC app usage and redemption rates of the WIC food benefits.^[76, 77]

...the adoption of technology by some WIC agencies to strengthen their programs serves as a blueprint for other agencies across the nation.

In the Colorado Texting for Retention pilot, text messaging was associated with increased participant enrollment and reinstatement in the program after attrition, as well as decreased voluntary terminations from WIC.^[78] In Vermont's WIC2FIVE pilot text messaging program, experimental group families received weekly automated text messages containing health and nutrition information targeted to their child's age and stage of development.^[79] While Vermont experienced decreased participation across all sites in the study period, the decrease was smaller among the five sites that implemented the text messaging.^[79] The LATCH trial assessing the impact of text advice on breastfeeding demonstrated that two-way text messaging had

significantly positive impact on facilitating faster contact between breastfeeding counselors and their clients, and intervention group mothers receiving texts were more likely to reach their breastfeeding goals.^[80, 81]

For clients in hard-to-reach geographic areas, the use of video-conferencing for breastfeeding advice enabled WIC agencies with a convenient, comfortable, and effective means for them to discuss their concerns with board-certified lactation consultants.^[82, 83] Video-conferencing has allowed mothers participating in WIC to receive expert support that they might not have otherwise been able to access, and was counted as a factor that positively impacted their participation in the program.^[82-84] Other studies have found that internet nutrition education is an effective alternative to traditional in-person WIC nutrition classes preferred by some participants.^[85]

When the USDA granted emergency waivers during the pandemic that allowed many WIC services to be delivered remotely, it not only kept the program functioning, but set the stage for its modernization. Early feedback suggests families enrolled in WIC welcome a hybrid model with a mixture of in-person and remote service delivery. During the pandemic, participants have reported high satisfaction with phone appointments (96%), interactive texting (96%), online education (94%), email (93%) and video appointments (80%).^[86] Particular features of WIC, however, which involve point-of-care services—such as checking an infant's hemoglobin levels—may best be administered if retained as in-person services.

Online ordering is the next frontier for updating the WIC shopping experience. Doing so would allow participants to purchase their food in the same way that many other Americans shop today. A special USDA task force recently provided recommendations to the USDA about incorporating online ordering in WIC and further guidance is expected to be issued by the USDA later this year. Four new USDA projects involving multiple WIC agencies have begun piloting e-shopping and mobile ordering, but widespread adoption is limited. Beyond the waivers, online purchasing is currently not permitted under current WIC regulations, which require the cashier's presence to redeem the benefits.^[87]

As part of the Wiring WIC: Health and Technology Initiative, a dozen key recommendations were identified that holistically constitute an innovative approach for improving nutrition, health, and the WIC participant experience, and contain strategies for boosting enrollment and retention in the program. Since the 50% Summit was convened in 2017, significant progress has been made on implementing some of these recommendations, which will be described in the progress section of this report. In recent years, the adoption of technology innovations by some WIC agencies to strengthen their programs serves as a blueprint for other agencies across the nation. Nonetheless, work remains to be done to modernize WIC to better serve the needs of millennial and Gen Z participants. It is our hope that the recommendations and action steps proposed in this report will increase awareness about the public health impact and potential for digital modernization of this important food

assistance program. The report also details some of the progress that has been made to achieve this goal, as well as COVID-19 pandemic's role in accelerating the implementation of many of the recommendations from this and other organizations' work. It is important that the emergency waivers issued by USDA during the pandemic for delivery of remote services be made permanent. Additionally, further innovations are needed to continuously update WIC with technology so that the program can more effectively, equitably, and efficiently deliver benefits and services in the years ahead.

The need to alleviate food insecurity, reduce obesity rates, and enhance the health of Americans is so pressing that every effort must be made to strengthen and modernize WIC as a critical safety net program for millions of Americans, including nearly 50% of all infants born in the United States, our nation's future.^[20]





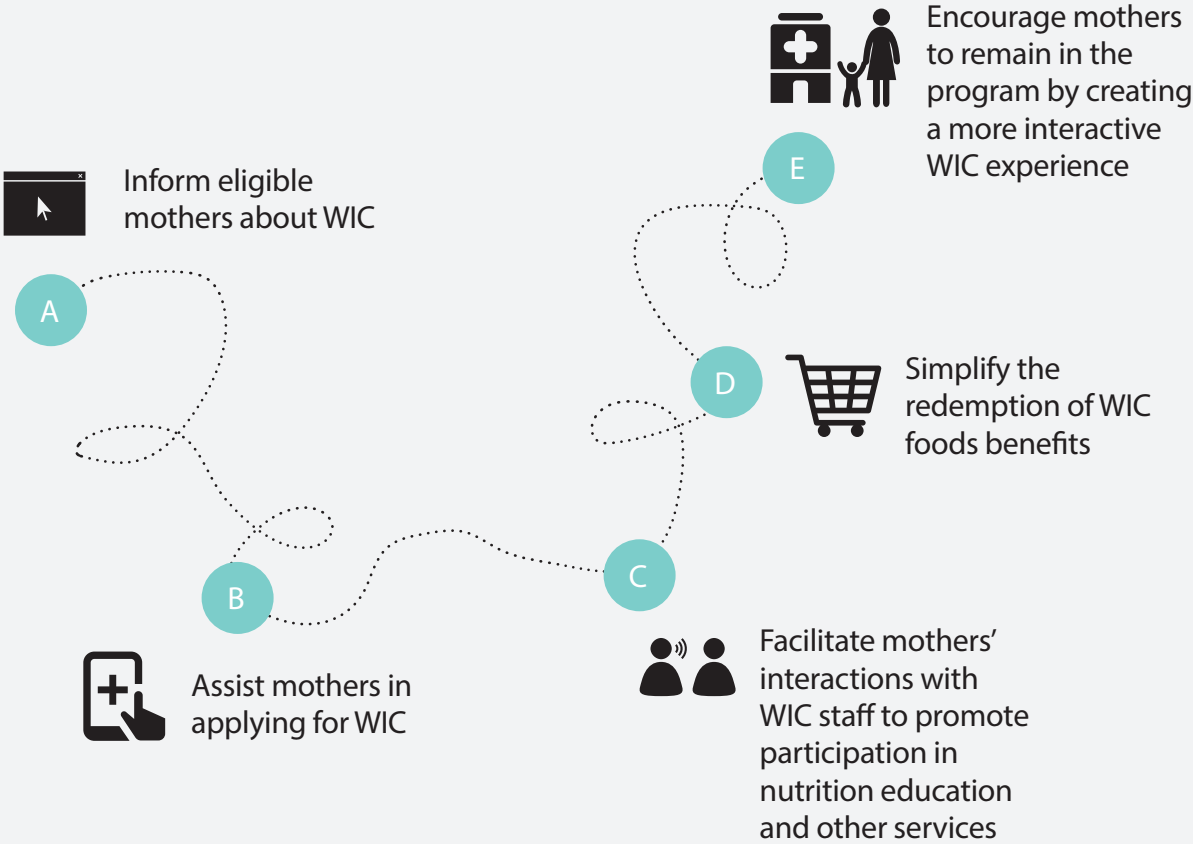
IX. Menu of Recommendations

Wiring WIC: Technology Innovations to Strengthen the Program’s Impact in the Digital Age

The Wiring WIC: Health and Technology Initiative identified multiple points along the WIC journey for strengthening WIC as a human-centered, technology enhanced program, along with opportunities for proposed policy interventions. For some recommendations generated at the 2017 50% Summit, important progress has been made described in the section that follows, WIC Technology Innovations: A Progress Report.

Part I. Recommendations along a Mother’s Journey through WIC

An Overview





Inform eligible mothers about WIC

1. Conduct WIC outreach through other federal assistance programs. Approximately 80% of current WIC participants are enrolled in one or more of these federal programs.
 - Support WIC agencies' efforts to perform digital outreach to inform eligible mothers already enrolled in Medicaid, TANF, SNAP, and other federal and state assistance programs, about the benefits of WIC and provide them with the necessary

enrollment assistance. Build an interactive digital platform to seamlessly cross enroll eligible people in WIC and other federal assistance programs with little or no administrative barriers.

- Enhance and facilitate digital educational campaigns concerning WIC benefits and enrollment in partnership with hospitals, community health clinics, retail stores, Early Head Start and Head Start, and other places where pregnant women and mothers of infants and young children visit.

2. Use social media to conduct WIC outreach and recruitment

- Expand the use of social media in WIC outreach campaigns, to increase enrollment. Social media with a targeted outreach algorithm is a powerful tool for identifying and connecting with WIC eligible mothers. Enhanced national social media outreach

strategies and campaigns conducted by the USDA, NWA and other organizations would continuously develop resources and tools to help WIC's local agencies across America identify and enroll eligible participants.



Assist mothers in applying for WIC

3. Update the application and certification process
 - Utilize tools such as digital portals and interactive, customizable mobile- and web-based apps that simplify the WIC application process by allowing applicants to upload and submit certification documents virtually.

- Create a digital wallet to facilitate and streamline cross-enrollment strategies with Medicaid, TANF, SNAP, and other federal and state assistance programs. If, for example, an applicant is already qualified for SNAP or Medicaid, she would be cross-enrolled in WIC without needing to upload the same eligibility documents separately.
- Explore technologies to efficiently upload formula prescriptions by a physician, nurse, or other medical providers to help expedite the review of documentation prior to certification appointments.



Facilitate mothers' interactions with WIC staff to promote participation in nutrition education and other services

4. Modernize the clinic and education experience

- Integrate app and web-based technologies, including telehealth services, to provide a more personalized nutrition education experience and breastfeeding support for WIC participants, i.e. "myWIC."
- Allow the remote service provision in WIC by waiving the physical presence requirements.
- Reduce in-clinic waiting times by offering appointment scheduling through web-based and text messaging applications.
- Foster a hybrid in-person and virtual WIC experience.



Simplify the redeeming of WIC eligible food benefits

5. Explore digital innovations to improve the shopping experience

- Implement eWIC with the use of high-impact, creatively designed WIC shopping and education mobile apps that create an easier and more innovative shopping experience.
- Create a virtual reality shopping environment to train new participants about how to identify WIC-authorized vendors, check balances, scan food products for eligibility, purchase eligible foods, and address any issues if an EBT card is rejected in the checkout process.
- Allow online ordering, mobile pay, in-store/curbside pickup, and home delivery for WIC participants.
- Develop digital tools that will enable participants to locate specific eligible foods in case of emergencies, such as the pandemic or infant formula recalls and shortages.
- Expand partnerships with online vendors for ease of food benefit redemption.



Encourage mothers to remain in the program by creating a more interactive WIC experience

6. Reduce WIC attrition rates with engaging, user-friendly apps, texting, teleconferencing and other digital services

- Create WIC online ordering platforms to allow participants to redeem benefits virtually with options for curb-side pickup or home delivery.
- Moderate social network groups as virtual co-ops for WIC mothers to share WIC participation experiences, breastfeeding support, parenting tips, and child-care information.
- Employ video chat and texting between WIC participants, counseling, and nutrition education staff.
- Use social media and texting to promote the importance and value of WIC services for parents of infants and children between the ages 1–4.

Part II. Recommendations for Program and Policy Actions



Establish public-private sector partnerships

7. Leverage partnerships to enhance the client experience and improve program administration

- Foster partnerships between the government, experts in technology, policy, design, public health, EBT vendors, app developers, and researchers aimed at identifying barriers to WIC enrollment and retention.
- Propose innovations to boost program participation and retention.

- Use innovative digital services that are targeted to participants' needs and help families with children to access healthy foods, health referrals, and nutrition services education.
- Permit mobile-based transactions at Farmers' Markets to enable greater access to fresh produce.
- Work with venues, such as museums and public transportation to recognize the WIC EBT cards as an electronic pass to access services, cultural institutions, and events at a reduced cost.



Enhance research, data collection, and program evaluation

8. Establish a national WIC technology assistance center (TAC) for research and program improvements.

- Collaborate with the research community to design a national technology assistance center (TAC) with a cross-agency data warehouse for routine uploads of de-identified administrative, health outcomes, and eWIC data, including participant retention and food benefit redemption information.
- Develop technical guidelines and protocols to increase compatibility across WIC management information systems (MIS), database, apps, and other technology tools and platforms to create an open ecological system for a variety of technology users, researchers and vendors.

- Leverage WIC MIS and other data sources to identify patterns in program enrollment, retention, and attrition.
- Conduct regular evaluations of technology tools on WIC's impact, and upload these findings to the USDA's website for stakeholders to review.
- Provide technical assistance to all WIC agencies and conduct research to demonstrate how local agencies can use existing WIC data to boost retention and decrease attrition.
- Conduct surveys through WIC shopping and education apps and create a database for evaluation of client satisfaction.
- Create a USDA database of research studies alongside partner organizations to evaluate the effectiveness of digital technologies in boosting enrollment and reducing attrition from WIC.
- Increase research on the use of cutting-edge technology, including artificial intelligence, big data, virtual reality, and machine learning, to build next-generation tools for WIC operations and service delivery.



Wire WIC's program culture and ensure equity in the program

9. Involve participants and staff in WIC program modernization

- Ensure WIC participants and staff perspectives are included in efforts to design technology innovations, conduct research, ensure inclusivity, and improve service delivery and education.
- Provide staff training to build proficiency with new digital tools to help create a cultural shift that supports the use of technology innovations in combination with in-person services to enhance WIC's mission and strengthen program results.

- Develop online and mobile app surveys for WIC participants to identify and implement technology enhancements that work best for participants.
- Ensure equity in access to digital tools and services that are modernizing WIC as well as health service delivery.
- Provide technological assistance and training to help reduce health disparities and avoid any extra administrative barriers across sociodemographic groups.



Expand the WIC technology focus at the USDA

10. Focus on participant-centered technology at the USDA

- Establish USDA Food and Nutrition Service (FNS) special task forces to identify, test, and expand mobile, online ordering, and other technology innovations that can benefit all 89 WIC agencies.
- Use human-centered design to produce user friendly tools for WIC clients and staff.
- Permanently allow WIC local agencies to use approved telehealth technology as a complement to in-person services for enrollment, certification, education, counseling, among other operations.
- Ensure privacy and security guidance for technology use in the program to safeguard participants from harmful data sharing or technology misuse.

- Conduct an annual survey and mapping of the spectrum of technology tools being used across the 89 WIC agencies.
- Develop tutorials, guidance, and templates to assist local WIC agencies and clinics in developing social media outreach campaigns to boost program enrollment and reduce attrition.
- Design a section of the USDA's FNS website to serve as a technology resource hub to include guidance on using apps, Facebook, Twitter, Instagram, and other social media for outreach to WIC participants.
- Share innovations across federal food assistance programs.



Increase resources for WIC technology innovation and coordination

11. Dedicate funding for modernizing WIC technology infrastructure and innovations

- Increase resources in the Congressional appropriations process for WIC technology innovations so that all 89 agencies can use and benefit from these advances.
- Support the design and implementation of a universal, open-source digital ecosystem with USDA-developed standards, guidelines and protocols so that agencies and vendors can facilitate system integration regardless of technology providers.
- Increase support for digital pilot programs such as

online ordering, delivery services, and mobile pay, with the goal of improving client satisfaction and participation.

- Boost funding for research on technology innovations in WIC and their evaluation.
- Enhance coordination of electronic platforms between the USDA and the US Department of Health and Human Services (DHHS) to enable information sharing between federal assistance programs.
- Increase the availability of affordable broadband and mobile internet access to enable participants to easily access remote services, particularly in underserved areas.



Envision a national resource of online nutrition education for parents and families across America

12. Design a national online education resource hub and toolkit available to all parents with actionable information to promote healthy pregnancies and a healthy start in life for their children.

- Provide nutrition education, healthy eating information, breastfeeding guidance, and childhood development tips to all families in America through a national online platform and mobile app that is available to all parents regardless of WIC eligibility.
- Advertise this resource during prenatal classes, on maternity wards at hospitals, in doctor's offices, parent's, children's and advocacy organizations, and community health clinics.
- This comprehensive digital education resource hub would reflect a national commitment to improve the health and nutrition of all families with children during the critical period between birth and age five and importantly help advance maternal health as well.



X. Technology Innovations in WIC: A Progress Report

There has been significant progress for some recommendations detailed in this report since the convening of the 50% Summit in September 2017. The COVID-19 pandemic accelerated the integration of technology innovations in WIC. The following section provides examples of the important progress that has been made. It should be noted that several of the initiatives described below began prior to the 50% Summit. This section of the document is not meant to be a comprehensive overview of strides that have occurred in applying technology to strengthen WIC, but rather to provide select examples that demonstrate the evolution of the program over the past decade, and since the Summit was convened. It is our hope that these innovations will be more widely adopted in the future to the benefit of all 89 WIC agencies and their program participants in the United States.

1. The use of social media in WIC outreach and recruitment has been expanded

As a component of the \$390 million provided by American Rescue Plan Act (ARPA) of 2021, the USDA's FNS plans to conduct a multifaceted national WIC outreach campaign. Additionally, many state and local WIC agencies are now leveraging social media to reach potential participants and promote the importance of participating in WIC. The National WIC Association (NWA) has developed a social media toolkit released this year and hosted a Social Media 101 Webinar Series for its member agencies to facilitate the use of these strategies in WIC programs. The NWA's National Recruitment and Retention Campaign currently serves most WIC agencies, ITOs, and territories. This campaign provides a WIC logo, national branding, and messaging; digital and print advertising; WIC Facebook and

Instagram pages; a central website (www.signupwic.com) and text-to-enroll feature; a social influencer campaign; point-of-care literature for pediatrician and OB/GYN offices; and a toolkit for local and state agencies that includes print ads, posters, videos, and other materials to download for WIC agency use. WIC agencies can put funds towards licensing this campaign for their use.

The USDA should develop and provide these kinds of social media and outreach tools on their website, serving as a federal national hub of information resources for WIC agencies and program participants.

2. The WIC application and certification process has been updated to allow for online certification

Since the 50% Summit in 2017, some WIC state agencies including Arizona, Colorado, California, Maryland, Oklahoma, North Carolina, and Oregon have allowed uploading of electronic documents to determine eligibility for participating in WIC. Several state agencies including North Carolina and Oregon allow for smartphone photos of required documents to be texted or emailed for WIC certification. Colorado WIC encourages local agencies to use the immunization registry to document a participant's identity and has trained their staff on the use of electronic documents for WIC certification. As part of the waivers given to the USDA during the COVID pandemic, 35 states were granted short-term extensions of child certifications for up to 90 days, a modification which simultaneously reduced the administrative burden on WIC clinic staff and enabled children's certification periods to be



aligned with those of other family members.^[30] Many families have expressed positive feedback regarding the longer intervals between certifications, suggesting a wider period between certification may be an innovation in the program that will remain in place once the pandemic ends.

Women, infants, and children who are currently enrolled in Medicaid, SNAP, TANF, or other programs in some states no longer have to show income documents to be enrolled in WIC: they simply provide proof of being enrolled in one of these other programs to qualify. As of 2017, 32/12/9 states have access to an online Medicaid/SNAP/TANF portal/data to check for adjunctive eligibility in WIC, respectively.^[85]

USDA and other stakeholders should support efforts to achieve more of this data sharing between federal assistance programs. The exchange of data between the USDA and medical providers should be encouraged for infant formula prescriptions as well as for income and biometric data, and other kinds of information, while complying with the Health Insurance Portability and Accountability Act of 1996 (HIPAA). It is essential that secure data systems be in place to protect participant/patient privacy when partnering with WIC.

3. The WIC clinic and education experience is being modernized

As of November 30, 2018, 30 states, Washington DC, 3 US territories (American Samoa, Guam, and the Commonwealth of Northern Mariana Islands), and 3 tribal nations are using 17 different WIC-related apps. Eleven of these apps offer features to assist in real-time

shopping for WIC food products.^[61]

Multiple WIC agencies have begun leveraging technology for clinic appointment scheduling. For example, some Arizona WIC programs have added an online appointment request option to the agency's website and linked to this form on their Facebook page. Michigan WIC allows applicants to schedule initial certification appointments and request recertification appointments through the WIC Connect app. Participants can also view upcoming appointments, find a local clinic or store to shop, check remaining food benefits, and more on the WIC app. New York WIC utilizes an online screening and referral tool. State agencies, including the District of Columbia, are subscribing an app to provide 24/7 access to professional lactation support.

WIC agencies are rapidly adopting text messaging to facilitate appointment scheduling and issue reminders. In fact, since the 50% Summit was convened, many state and local WIC agencies are now offering automatic call or text messaging services that provide appointment reminders for their participants. Select states including California and Minnesota are conducting videoconference appointment pilot programs to evaluate the effectiveness of this service delivery option. Oregon WIC has implemented an electronic messaging system that is a two-way, HIPAA-compliant desktop text messaging service. Additionally, the San Diego State Research Foundation sends reminder texts to consenting WIC applicants and participants three days prior to their appointments. In states including Massachusetts, two-way texting pilot interventions have been implemented to enhance breastfeeding education and support.

The USDA/Tufts Telehealth Intervention Strategies for WIC (THIS-WIC) is exploring strategies to use telehealth innovations to enhance service delivery, improve the quality of programming and access, provide flexible and adaptable tools, address potential shortages of qualified professionals, and increase engagement with the WIC program. As a part of the program, seven WIC state agencies received grants up to \$1,000,000 each to explore innovative telehealth solutions to deliver nutrition education and breastfeeding support to WIC participants.^[88]



Using a variety of in-person and technology enriched strategies, clinics can empower participants to choose what service delivery methods works best for them and their families, increasing the likelihood of continued participation in WIC.

4. Digital innovations to improve the shopping experience are being explored

Several WIC apps now allow clients in many states to access the balance of their current WIC food benefits and use a Universal Product Code (UPC) scanning tool to check the WIC-eligibility of food products in stores. Many states including Arkansas and South Dakota have developed informational video tutorials to provide educational support for their participants as states transitioned to EBT for food benefit distribution.

As required by the Consolidated Appropriations Act of 2021, the USDA established a task force to examine various measures to facilitate the WIC benefit redemptions with convenience, safety, and equitable access.^[89] The task force comprised of representatives from retailers, manufacturers, state and local agencies, technology companies and WIC participants, submitted its recommendation to USDA on September 30, 2021. The measures included online and telephone ordering or purchasing, home delivery, and self-checkout. The recommendations highlighted the need for the most intelligent WIC ordering and payment system, and underscored the urgency for changing some outdated WIC regulations that prevented technology innovations from being implemented.^[89]



5. High WIC attrition rates are being targeted with engaging, user-friendly technology

Many states now offer comprehensive WIC apps to facilitate the shopping experience, appointment scheduling, document uploads for certification, food benefit expiration reminders, benefit balance checking, menus and recipes to use the WIC food benefits. One such example of successful, user-friendly technology is Primetime Nutrition in California. Primetime processes over 1,000 WIC orders a week through its app or website, and its platform provides users with real time substitutions, change requests, and curbside pick-up.

Vermont WIC is developing a game-based telehealth solution for use during pregnancy and the early postpartum weeks to promote breastfeeding. Through the game portal, qualified WIC staff members will be able to track a WIC participant’s progress in order to tailor counseling to their needs. The game is designed to work in areas with low-bandwidth internet access.^[88]

6. Partnerships are being leveraged to enhance the WIC client experience, boost enrollment, and reduce attrition rates

Recognizing the important role that communities play in recruiting, retaining, and improving the experience of WIC participants, many agencies are now leveraging technology to strengthen engagement within the community. This will help eligible people learn about the program’s benefits and how to enroll. Additionally, some WIC agencies host events and convene in person and online group classes to foster community, promote breastfeeding, offer social support, and provide parenting education, among other services. Some WIC agencies work with community partners to offer “Baby Cafés,” which are community-based drop-in breastfeeding support sites offering ongoing, high-quality lactation care that is free-of-charge to breastfeeding mothers.

Several state WIC agencies including Vermont have begun hosting summits focused on improving recruitment and retention in WIC. Additionally, the National WIC Association working with the Center for Budget and Policy Priorities convenes events with diverse stakeholders specifically focused on developing and implementing strategies to improve the WIC

participant experience and to recruit more pregnant women and mothers into the program.

Massachusetts WIC has established the EBT Card to Culture Organizations program, a partnership between the Department of Transitional Assistance (DTA) and the Mass Cultural Council, to offer discounted admissions to many of the Commonwealth's museums and cultural institutions. This partnership provides access to enriching cultural and social experiences for Massachusetts families participating in Federal assistance programs including WIC.

7. Multiple pilot projects in WIC innovation have been funded

Since the 50% Summit was convened, USDA awarded a cooperative agreement in 2019 to the Johns Hopkins School of Public Health to establish the Hopkins Participant Research Innovation Laboratory. This project is exploring ways to boost retention in WIC by testing the impact of innovative management, clinical, and retail tools on long-term family engagement with the WIC program. The program has provided support to five local agencies in Arizona, Florida, North Carolina, and New York. However, since only a few agencies could be funded through this initiative, resources are also needed for technology innovations that would strengthen all WIC agencies. Two other USDA cooperative agreements were issued in 2019 to boost technology innovations with awards to several WIC agencies. The USDA/Tufts Telehealth Intervention Strategies for WIC (THIS-WIC) supported seven state agencies to apply telehealth technologies to deliver various WIC services.^[88] The Gretchen Swanson Center for Nutrition awarded grants to four state agencies to develop and/or implement WIC online ordering with selected WIC-authorized vendors.^[87] USDA should continue to increase its investments in technology innovations for WIC in the years ahead.

At the local level, WIC agencies such as Jackson County, Michigan WIC are beginning to use management information system (MIS) to conduct proactive outreach and reduce attrition from the WIC program. Additionally, PHFE WIC in Southern California has a data system that generates several reports allowing staff to evaluate participant retention and target their efforts based on the data WIC. Additionally, the National WIC Association built a website (www.thewichub.org) to

provide resources and important information for WIC stakeholders.

To broaden awareness of the WIC program, USDA should continue to update its WIC online pages and resources to serve as a national information hub about WIC research, nutrition education, and services.





XI. From Innovation to Impact: Reimagining the WIC Ecosystem

The modernization of WIC to include 21st-century technology innovations requires collaboration between private and public sector stakeholders. WIC relies on an annual appropriation, subject to Congressional approval. While there are some operational adjustment funds, more resources are needed for significant technological enhancements across all 89 agencies. Some WIC agencies have adequate program budgets for technology updates in addition to what was provided for the EBT rollout, but many do not have sufficient funds for developing and implementing the recommendations described above. In response to the COVID-19 pandemic, the USDA increased investments in technology innovation. As previously mentioned, in President Biden's ARPA, \$390 million of WIC's \$880 million allocation went directly to WIC outreach and modernization, including improvements to WIC's technological infrastructure and innovation. Continuing investments, not only from the government, but from the private sector, are needed to modernize the program's delivery models with innovations needed to meet the needs of this generation of WIC participants, and to keep updating the program in the years ahead.

The Child Nutrition and WIC Reauthorization Act authorizes funding for the federal child nutrition programs to ensure that millions of low-income children have access to healthy and nutritious foods. Although these programs are permanently authorized, Congress can review them every five years, providing policymakers with an opportunity to strengthen federal nutrition assistance initiatives in order to better meet the needs of today's children and their families. When passing the next Child Nutrition and WIC Reauthorization Act, Congress should consider providing a dedicated stream of funding for the implementation of technology innovations across all 89 WIC agencies.

The legislation should encourage state agencies to modernize WIC services to include both in-person and online options for program certification, benefits issuance, nutrition education, breastfeeding support, and referrals to other social and health services. Legislative provisions should be considered that allow critical aspects of program operations to be digitized. WIC stakeholders across the public and private sectors should work together to ensure that the legislation contains language-supporting pilot programs to test service delivery and education such as online ordering, home delivery, electronic purchasing of fresh fruits and vegetables at Farmers' Markets, and mobile pay. If the evidence shows these innovations to be effective, then sufficient resources should be provided to permanently incorporate these options into WIC.

The legislation should encourage state agencies to modernize WIC services to include both in-person and online options...

Building on existing online ordering platforms, WIC participants should be able to identify and easily order eligible foods along with their other shopping needs. Additionally, another platform could be established offering exclusively WIC eligible foods, which would

save participants' time searching for these products online. These approaches could foster a stigma-less, equitable shopping experience. Additionally, if delivery is challenging in specific geographic areas, prepackaged WIC pick-up at stores would make shopping easier and time-efficient for many parents. Just as there are WIC-only stores in some states such as California, there could be a WIC-only online portal filtered by state agency requirements, and managed by an online company identified by the USDA contracting process.

Through multi-sector collaboration USDA's FNS and State WIC agencies can identify innovations and create digital products to enhance benefit issuance, service delivery and education in the program. Through collaborations across the technology, policy, design, and public health sectors, innovations like apps, text messaging, online shopping, delivery, and mobile pay can be explored as potential strategies for modernizing WIC. Additionally, involving participants and community stakeholders in research, pilot project development, and the design and testing of program innovations is essential for strengthening WIC and meeting the needs of its beneficiaries in the 21st century.

The 50% Summit sparked excitement about the potential of harnessing innovative technology to improve the program experience and outcomes. The Summit also produced a number of new collaborations between public health experts, technology leaders and WIC agencies. Moreover, since the Summit was convened and its recommendations were issued in September 2017, USDA has made new investments in developing and evaluating the impact of technology innovations in WIC to boost recruitment and retention in the program nationwide.

As described above, in 2019, USDA's FNS funded a Johns Hopkins School of Public Health/USDA Participant Research Innovation Laboratory for Enhancing WIC Services (HPRIL), the USDA/Tufts Telehealth Intervention Strategies for WIC (THIS-WIC) and the Gretchen Swanson Center for Nutrition WIC Online Ordering Grant. These recent USDA investments represent a step in the right direction for creating a user-friendly, modern, and wired program that meets the needs of the WIC participants in the 21st century. However, in comparison to the needs of all WIC agencies across the country, these awards were relatively small. Each funding opportunity has awarded sub-grants to a limited number of WIC agencies, when all 89 programs are in need of technology modernization and innovations. Because this recent funding is distributed through grants, they require a considerable investment of time and resources to prepare, which puts under-resourced WIC agencies at a disadvantage and potentially widening technological disparities across geographic regions. For these reasons, it is critical that in addition to these special cooperative agreements, a dedicated stream of USDA funding is secured to support every WIC agency in its journey towards an innovative WIC program for the digital age.





XII. The Impact of the COVID-19 Pandemic on WIC Operations




During the peak of COVID-19 in 2020, 38 million Americans were living in households that struggled with hunger.^[90] Studies have shown that the pandemic and economic downturn led to record high levels of child hunger.^[91] Recently, the USDA reported that during the pandemic the rate of food insecurity for households with children increased from 13.6 in 2019 to 14.8% in 2020.^[92] This national public health crisis posed significant challenges for all federal and state medical and nutrition assistance programs, including WIC enrollment, participation, and retention. Routine program activities including in-person biometric screenings, certification appointments, and shopping for foods were challenged. But from this difficult time has emerged an opportunity to innovate WIC.

In March 2020 at the COVID-19 pandemic emerged, the WIC in-person shopping experience was significantly disrupted as food shortages plagued the country and the public stocked up on extra groceries in the face of lockdowns. The WIC prescription limited food options for participants, and because certain items, sizes, or brands were unavailable due to shortages, it became increasingly difficult for WIC to deliver benefits. The waivers USDA issued to overcome these difficulties included modifications to food prescriptions, substitutions, and minimum store requirements, which allowed WIC families and vendors to have the flexibility needed to function during the pandemic. Additionally, the waiver authority granted through the passage of the Families First Coronavirus Response Act of 2020 allowed food substitutions based on reported shortages of items in a state across almost every food category as well as permitted additional package sizes and options.^[30] Going forward, many of these waivers should be made permanent in the WIC program.

Special Waiver Authority and Investments in WIC

In March 2020 at the beginning of the pandemic, with stay-at-home orders shuttering clinics' doors around the country, WIC providers began to reschedule appointments and deliver services remotely. The closure of WIC agencies during this national emergency created unprecedented challenges for WIC providers who were required by federal rules to conduct certain program operations in person. The Families First

Coronavirus Response Act of 2020 provided waiver authority of statutory physical presence requirements and other regulatory barriers to accessing the program during the public health crisis.^[93] State WIC Agencies rapidly applied for and received critical, though conditional, waivers necessary to provide services, including waivers for the physical presence requirement for participants.



Though the waivers have allowed WIC providers to continue services for families in the pandemic, their conditional nature has left WIC participants, vendors, and staff with uncertainties about whether they will be made permanent. The transition from paper vouchers to “eWIC” delivery of services allowed for a more flexible program throughout the pandemic. Remote services provided during the pandemic ranged from extending the issuance of food benefits to virtual clinic appointments. State and local agencies were able to remotely load benefits onto EBT cards in EBT states.^[30] The initial evidence from some state agencies indicated that remote services increased participation, maintained engagement with participants, and provided more convenience for WIC families. A recent study found that states requiring in-person or mail-in reloading of WIC benefits to EBT cards (i.e., “offline EBT” states) experienced a 9.3% relative decline in participation compared with “online EBT” states, which can reload benefits remotely to the participants’ EBT cards.^[94] This study underscores the importance of digitally modernizing the program to better meet the needs of its participants. To reduce the burdens for offline EBT/“eWIC” states for both staff and participants, the USDA approved another set of waivers that allowed benefit issuance for four months, rather than the usual three-month issuance. Additionally, nutrition education and recertification appointments were conducted on the phone or by video conferencing technology.

Integrating Technology to Enhance WIC Services and Participation

While many services can be adapted to virtual platforms, some components of the WIC program, like breast-feeding instruction, are best conducted and preferred by participants to be held in person. A recent study found that WIC participants reported high levels of satisfaction with remote service delivery, as well as overall satisfaction with the WIC program services during the pandemic.^[31] Nearly a quarter of study participants preferred for all WIC services to remain remote, while three-quarters still desired at least some in-person contact with WIC staff after the pandemic.^[95] Therefore, to better serve participants, WIC

In addition to the waiver authority, the Families First Coronavirus Response Act of 2020 authorized the USDA to permit state agencies to defer anthropometric measurements and blood work obtained at clinic visits.^[93] Beyond the pandemic measures, state agencies should explore the flexibility of these in-person tests as part of a broader push to make the WIC program more convenient for its participants and clinic staff.

Moving forward, these waivers and other changes to the program should be made permanent. Congress should build on its \$880 million investment in WIC through ARPA with an annual funding allocation for WIC technology innovation and outreach.^[66] In the meantime, the USDA should continue its state-by-state waiver program until these can be codified into program rules. As noted, these flexibilities during the pandemic waived certain in-person requirements for shopping, enrollment, certification, and clinic visits, and should now be made permanent. Several of the changes to WIC that occurred during the COVID-19 pandemic began as recommendations presented at the 50% Summit in 2017.

may develop a hybrid model that combines the best elements of virtual and the physical presence services in the program.

State agencies can expand establishment of secure systems for applicants to submit required documentation, like proof of residency or income, virtually for a more streamlined application process. State agencies should also develop digital strategies to obtain signatures, including through electronic and telephonic platforms. A smart system with various tools a participant can use (e.g., participant portal, online



application, document uploader, and appointment scheduler can help reduce barriers to participation and streamline the experience for WIC beneficiaries.

Where possible, state agencies should encourage the establishment of digital platforms and procedures to confirm adjunctive eligibility with Medicaid, SNAP, and TANF systems and coordinate the enrollment processes across these programs, since providing targeted outreach to enroll in WIC may increase participation. Strategies can include creating a single digital application for multiple programs, promoting data sharing between the programs, co-locating facilities near one another, and distributing program information at one another's facilities and online. Participants should be allowed to use their updated health records in primary care facilities as a substitute for health screenings in the WIC clinic. More innovative approaches can be implemented to reduce the barriers for enrolling in the program and streamlining services for participants.

The integration of technology into WIC operations can have a positive impact on the WIC program. There has been high satisfaction with these technology innovations in service delivery during COVID-19.^[86] Transitioning to telehealth where appropriate presents an alternative service modality for one-on-one counseling and nutrition education. Participants have reported virtual appointments to be more convenient in the context of transportation and scheduling constraints. However, to implement these approaches, WIC agencies and participants need webcams and compatible computers or mobile devices as well as reliable broadband or high-speed internet services. In addition to these structural considerations, safeguarding participants' privacy and security must be a key consideration when developing WIC innovations.

Federal Actions to Support Innovations in WIC during the COVID-19 Pandemic

Since the beginning of the pandemic, WIC made important adjustments to the program in order to keep providing services and support to program participants. The USDA recently issued a report on how its program partners leveraged flexibilities provided during the pandemic. For example, 99% of all WIC local agencies conducted remote certification appointments, up from 12% before this public health emergency. Nearly all local agencies (99%) offered certification appointments by telephone, 22% continued to offer in-person appointments, and 11% used video call platforms. While there were challenges in transitioning to remote appointments, the changes that have been made paved the way for further innovations. All, or nearly all, state agencies reported that the physical presence and remote benefit issuance waivers made WIC safer, more accessible, and more convenient for participants' schedules during the pandemic. Over the past two years, examples of WIC agencies applying technology include Maryland updating their WIC app so

participants could upload documentation and access nutrition education – all online. Michigan is providing 24/7 breastfeeding support through a call in and texting hotline to answer questions from nursing mothers. The Standing Rock Sioux Tribe now uses an upgraded WIC mobile clinic to reach underserved communities with educational materials, food, breastfeeding information and other services.

To decide how to direct the funds allotted by ARPA, the USDA's FNS met with a diverse range of program stakeholders. Two goals were identified for new resources: 1) increase WIC enrollment and retention and 2) reduce disparities in program delivery. One investment will be a WIC national public health outreach campaign, in order to better connect with WIC eligible individuals and increase public awareness of the health and nutrition benefits associated with participating in the program. USDA also plans to invest in a national technical assistance center (TAC) to apply human-

centered design principles to the WIC application and certification process, and assist states in implementing both business and technology solutions to improve the WIC participant experience. USDA will also support a network of WIC Peer-to-Peer Learning Centers for state agencies to share their approaches and best practices for increasing enrollment and retention. Through supporting a range of efforts, including online ordering pilot projects, the funds will be used to simplify and improve the shopping experience and address disparities in food access across communities in the United States.^[96]

The Consolidated Appropriations Act of 2021 required the USDA to establish a Task Force to study innovations to streamline the redemption of WIC benefits while promoting convenience, safety, and equitable access for participants in the program.^[97] At the end of September 2021, the Task Force submitted a report to USDA outlining the results of the study mentioned above, as well as recommendations for implementation, such as providing a broader range of shopping options for WIC participants. The USDA then submitted a report to Congress with a plan for carrying out the recommendations received, and an assessment of whether legislative changes would be necessary to enact the plan.

New Frontiers in WIC Service Delivery


Online ordering is the next frontier for improving the WIC participants' shopping experience. The current program regulations are outdated and reflect an earlier era of paper vouchers, requiring WIC transactions to be conducted in-person, in the presence of a cashier or grocery store employee. Online ordering would allow WIC participants to redeem their food benefits in a similar way that many other Americans shop today. WIC online ordering and home delivery can be integrated into commercial platforms, and all transactions should protect the nutritional integrity of the food package and consumers' privacy. Efforts to establish online shopping for WIC customers build on existing progress by retail grocers and online platforms to offer online options for SNAP recipients and the general public. However, because WIC and SNAP transactions are programmed

The MODERN WIC Act of 2021 is a proposed legislative initiative to permanently revise WIC's in-person application requirements to allow for video or telephone certification within 90 days. By striking the physical presence requirement at certification, the legislation would supplement in-person appointments with video appointments that still facilitate real-time interactive communications. The bill would also allow for remote benefit issuance, removing the requirement of the participant to travel to a local agency to obtain food instruments, including EBT cards. Additionally, the legislation would enhance annual investments in WIC technology by allocating \$60 million to establish, develop, improve, replace, or administer technology platforms that enhance program services.^[98]



differently, retailers should create interoperable virtual platforms that accommodate transactions across the federal nutrition assistance programs. If possible, retailer platforms should include modifications that enhance the WIC shopping experience, such as virtual shelf tags/filters that identify WIC-approved foods. Four new USDA projects involving multiple WIC agencies have begun piloting e-shopping and mobile ordering.^[87] However, widespread adoption is limited since online purchasing is still not permitted under current WIC regulations.^[89]

The USDA is expected to reform its rules to remove regulatory barriers and allow online shopping as an acceptable way of redeeming benefits in WIC in the



Every effort must be made to strengthen and modernize WIC as a critical safety net program for millions of Americans, including nearly 50% of all infants born in the United States - and essential part of our nation's future.^[20]

future. USDA/FNS is expected to publish a proposed rule on WIC online ordering and transactions soon. This proposed rule would also allow FNS to modernize WIC vendor regulations to reflect current technology. USDA/FNS will seek public comments via this proposed rulemaking.^[99] After assessing input from the public, USDA will seek to finalize new regulations. In the best-case scenario, the USDA will issue a final ruling that could then be implemented at the state level; however, USDA sometimes requires additional public input and may issue an interim rule. Even if a final rule is issued, a delay of the effective date is possible, as USDA permits state WIC agencies a window to implement regulatory changes. Even still, USDA has the authority to issue waivers and flexibility under the American Rescue Plan Act of 2021 (ARPA) waiver authority, which will allow for online shopping projects to move forward in parallel to the rulemaking process. Future program rules should be prospective and inclusive of next generation

technologies. WIC innovation must remain current with, or even ahead of, other commercial processes. New regulations and systems changes must account for the possibility of future innovation, including new transaction technologies like mobile payments. Additionally, new online shopping options should be developed to endure, ensuring ease of access to sustain utilization among program participants.

Under the existing regulations, several pilot projects have been implemented that allow WIC participants to order online but pick up products curbside or in-store with the payment of EBT cards. These pilot projects are setting the stage for national implementation and generated important knowledge and lessons that should be incorporated into future WIC online ordering. For example, smaller vendors might be in a disadvantaged position to adopt the WIC online ordering due to the limited resources or technology infrastructure. How to

handle the food delivery fee also remains uncertain: but New Hampshire WIC has provided such a service for decades, proving the operation is not impossible.

The WIC online ordering model can 1) address the supply chain issues in certain regions that occurred in the early stage of the pandemic, and 2) help reduce the infection risk of COVID-19 in a vulnerable population. Curbside pick-up can reduce the significant shopping barriers for mothers with young children, and therefore help promote benefit redemptions. WIC online ordering would make it easier for families to redeem the full value of their WIC benefits, particularly in settings

where they have limited access to local vendors or WIC-approved products. Additionally, WIC online ordering including home delivery would save time for participants with busy schedules. Recent research suggests that there is significant interest among participants in online ordering options.^[100, 101]

While COVID-19 has presented significant challenges for WIC operations, it has also provided opportunities to create a better, more resilient program for families in the future. Innovations that make the program more effective and efficient in this emergency should be evaluated for permanent adoption.





Ensuring Equity in WIC

The COVID-19 pandemic and its disproportionate toll on Black, Hispanic, and low-income communities revealed the shameful health disparities that have existed for far too long in our society. As we emerge from this health and economic crisis, equity must be central to every solution proposed including in WIC, whose mission is to provide a healthy, fair, and just start in life for the most vulnerable in America. While technology can be a force for good, it can also perpetuate injustice if not applied equitably. Digital access and skills have become foundational social determinants of health as social and health services, as well as information resources, are increasingly moving online. However, access to digital infrastructure including devices and availability of broadband is problematic in some communities.

We are in the midst of a digital transformation that could help ensure health equity or harm it. WIC should systematically evaluate and report the equity impact of the program, and ensure that interventions are culturally responsive.^[102] For example, services must be made available in the languages of the participants; broadband must become a basic part of our nation's infrastructure so that all people have access to digital services and education. The WIC clients' basic rights, such as privacy and data security, must be safeguarded in technology development and implementation.

WIC services must be made available in the languages of WIC participants

Given the pace at which technological advances in WIC are occurring, it is important to supplement this progress with research that evaluates how WIC can best provide appropriate technology options to meet its program needs. Although Black and Hispanic individuals participate in WIC at slightly higher rates than White individuals, systemic racism has disproportionately affected their daily lives and health. More exploration is needed to evaluate the impact of digital services on improving access to WIC benefits for Black, Indigenous and people of color (BIPOC) populations.

The pressing need to engage and retain the range of WIC families who come from diverse racial, ethnic and geographical regions requires a particular sensitivity to providing culturally appropriate services. The COVID-19 pandemic has revealed longstanding racial and ethnic discrimination and disparities that affect beneficiaries of this program. Diversifying the WIC workforce to better reflect the program's participants is critical, which can help strengthen trust as a bedrock of the WIC program. Advancing health equity in WIC must be a key priority for the program now, and in the years ahead.

In May 2022, President Biden announced for the first time in 50 years, the White House will host a Conference on Hunger, Nutrition, and Health in September 2022. This convening will further accelerate progress and help build a healthier future for all Americans.





XIII. Conclusion

For almost five decades, WIC has served as a vital safety net program for families facing food insecurity by providing access to healthy foods, breastfeeding counseling, nutrition education, and referrals to other health services. Research has found many health benefits for WIC participants that have resulted in healthier families as well as reductions in food insecurity, obesity, health care costs, and improved social service utilization. Additionally, through the establishment of the food package for program beneficiaries, WIC helps support our farmers, food manufacturers, and grocery store vendors nationwide and provides healthy food options in retail environments for communities across the country.

However, despite WIC's many accomplishments, the program faces two significant participation challenges: the need to boost enrollment and retain participants, especially children in the program. In the wake of the COVID-19 pandemic and beyond, WIC's continued success will depend on the program's ability to serve new generations of beneficiaries through user-friendly digital systems and tools in conjunction with in-person services. Most of today's new parents are Millennials and Generation Z that are highly connected to technology and especially keen on using social media. These parents need to view WIC as a valuable and easy-to-access source of nutrition, education, and health and social service referrals that is available to help them raise healthy children.

A key message of the Wiring WIC: Health and Technology Initiative is that partnerships across public and private sectors and a dedicated stream of USDA funding are needed to develop, implement, and continuously enhance technological innovations for a 21st-century experience across all WIC agencies in ways that are user-friendly, efficient, and destigmatizing for participants. The result should be a participant-oriented, "wired" WIC that helps boost enrollment and increase retention in this vital program that provides essential nutrition and health services for millions of families in America.

This report describes actions needed to usher in a new era for WIC in the Digital Age, and explores why and how stakeholders across public and private sectors should apply innovative technologies to improve the program's operations and service delivery. The COVID-19 pandemic heightened the urgency to create a more user-friendly, technology-enabled WIC program. We should continue to build on this progress in the years ahead. While WIC has significantly increased the use of technology since the program was established and as a result of EBT implementation and the pandemic, the program must continue to be updated with cutting-edge technologies and other new innovations to more effectively provide efficient and equitable services to all participants.

As President Franklin D. Roosevelt once said of our nation, "The test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have too little."

Modernizing WIC as a human-centered, technology-enhanced program is an opportunity to improve the health and economic security of millions of women, infants, and children in the United States, significantly reduce health care costs linked with hunger and obesity, and as a result, strengthen America now and in the years ahead.^[1]





XIV. APPENDICES

Appendix I: Project Staff and Collaborators

This project is an initiative of New America in collaboration with the Massachusetts Institute of Technology Media Lab and the Department of Nutrition of the Harvard T.H. Chan School of Public Health.

The views expressed in this nonpartisan analysis do not necessarily reflect the views of the institutional affiliations of any or all of the members of the project team. This is not a consensus document; individual members of the team endorsed the general policy direction, assessments, and the majority of recommendations in this report, though not necessarily every aspect.

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Health Policy Interns





Appendix II: Acknowledgments

It is our hope that the collaborative work synergized by Wiring WIC: The Health and Technology Initiative will help foster a spirit of opportunity, innovation, cooperation and commitment to strengthen WIC for participants and their communities.

We want to acknowledge the tremendous contributions and support of our collaborators and colleagues at the MIT Media Lab, the Department of Nutrition at the Harvard T.H. Chan School of Public Health, IDEO, and in the public health, nutrition, and technology communities.

Special thanks to Walter Willett, MD, DrPH, global nutrition leader, professor of Epidemiology and Nutrition, Department of Nutrition, Harvard T.H. Chan School of Public for his outstanding leadership and legacy of contributions to improving nutrition in the United States and globally.

The staff at New America's Health Innovations Lab has been instrumental in the coordination of project activities. In particular, the dedicated leadership and important contributions of Emily Stark, project coordinator and research associate were vital to this initiative including the report's preparation. Also, our deep appreciation to Matina Kakalis and Emily Yang, MSPH for their dedicated work in organizing the Summit and conducting background research for this report. Additionally, we want to acknowledge the work on this project of New America's Health Innovation Lab's fellows and interns.

Our gratitude to Harry Zhang, PhD, Professor of Community and Environmental Health, Old Dominion University for his expert review of this report, his important national leadership and research on technology applications in WIC and for his innovative contributions to strengthening this vital federal food assistance program.

The creativity and commitment of Hildreth England, RDN, director, HESTIA Design Lab; former assistant director, Open Agriculture Initiative & Co-chair, MIT's Food & Sustainability Working Group, MIT Media Lab; Heather Boesch, executive director of operations, IDEO; and Ann Kim, former portfolio director, IDEO Cambridge were critical to this project.

We also wish to acknowledge the important contributions of Arthur Burger for preparing the scientific literature review that provided a foundation for this report. He is a nationally recognized authority on supplemental food program management, EBT, and information technology. Our thanks to Jennifer Loyo, PhD, RDN and Karissa Horton, PhD of Limetree Research for their research contributions to the report and our appreciation to Judy Hause, former director of the Massachusetts WIC Program, for her input and participation in the 50% Summit.

Additionally, we want to thank the speakers who presented at the 50% Summit: David Paige, MD, professor of Population, Family and Reproductive Health, Johns Hopkins University; Reverend Douglas Greenaway, former president and CEO, National WIC Association; Art Burger, president and CEO of Burger, Carroll & Associates, Inc.; Jennifer Pahlka, founder and former executive director, Code for America; John Maeda, PhD, CEO, Chief Technology Officer, Everbridge and Former President of the Rhode Island School of Design; Jackie Bezos, president and co-founder, Bezos Family Foundation Sam Slover, co-founder and CEO, Pinto and co-founder and former CEO, the Sage Project; Deb Roy, PhD, director of the MIT Center for Constructive Communication and professor of Media and the Arts, MIT; and the WIC Directors and participants who shared their perspectives and personal experiences with the program at the Summit. Our appreciation is extended to all of the participants at the 50% Conference for generously giving of their time and expertise to this initiative.

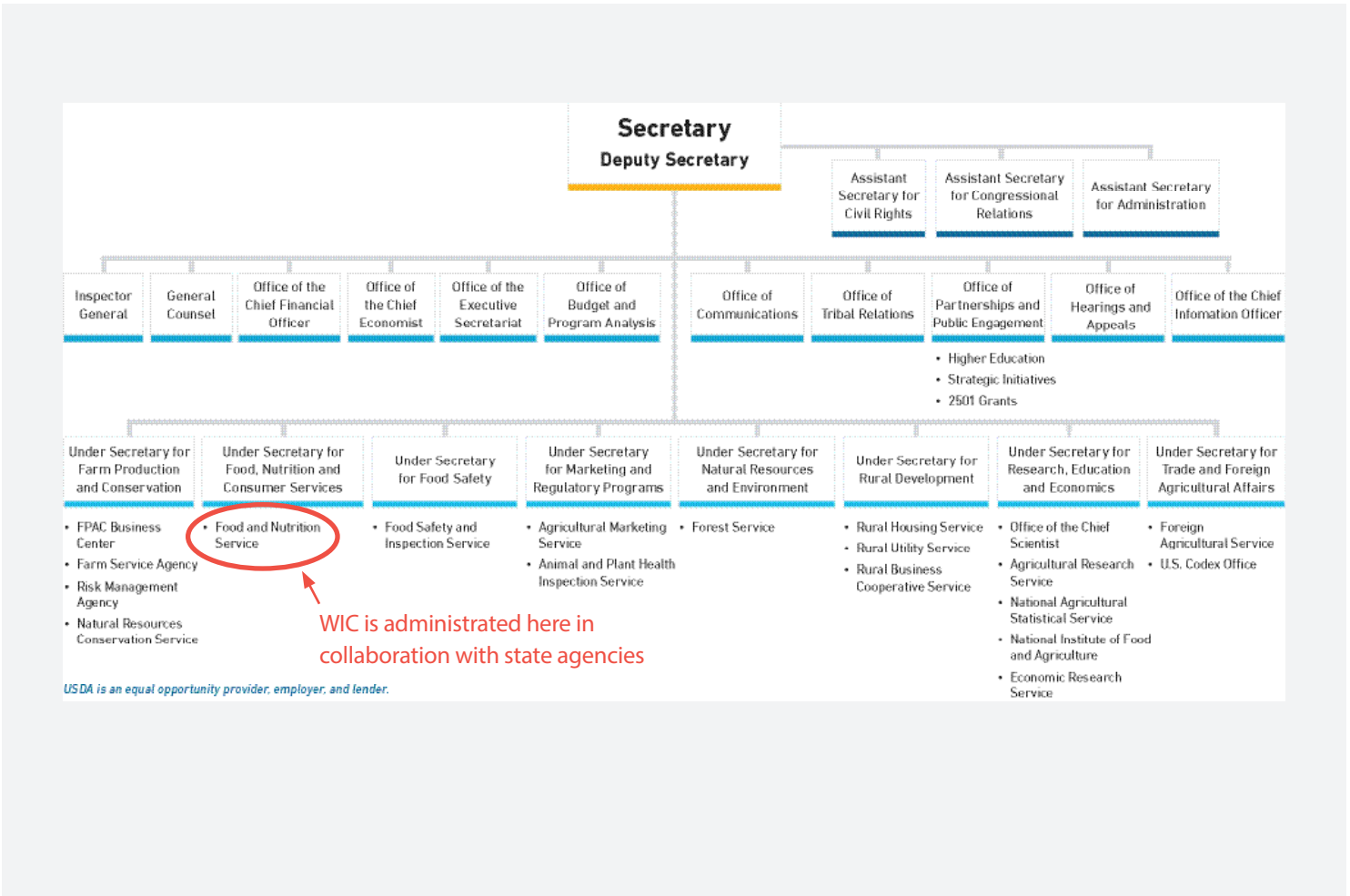


We particularly want to express our gratitude to the Rockefeller Foundation and the Aetna Foundation for their support of the Wiring WIC: Health and Technology Initiative and for their exceptional leadership in promoting and protecting the health of Americans. For more than a century, the Rockefeller Foundation has been dedicated to a single mission: promoting the well-being of humanity throughout the world. Today, the foundation pursues that mission with its dual goals of building greater resilience and advancing more inclusive economies. Through its portfolio of initiatives, the Rockefeller Foundation strives to catalyze and scale up transformative innovations, convene sector-spanning partnerships, and create systemic change to benefit poor and vulnerable people in America and around the world. We deeply appreciate the important expertise and insights provided by Manisha Bhinge, managing director, Global Networks and Partnerships and Michael Myers, former managing director of policy, at the Rockefeller Foundation. The Aetna Foundation, based in Hartford, Connecticut, supported projects to promote wellness, health, and access to high-quality care for everyone. We appreciate the dedicated work and support provided by Alan Eversley, former program consultant, and Alyse Sabina, MPH, former national program director. The views presented in this report are not necessarily those of the Rockefeller Foundation or the Aetna Foundation, its directors, officers, or staff.

As Ralph Waldo Emerson once said, "The first wealth is health." We hope that the multi-disciplinary collaborative work of the Wiring WIC: Health and Technology Initiative will help further catalyze the innovation, dedication, resources and commitment needed to help reduce food insecurity and obesity in America and achieve a healthier, more prosperous and equitable nation in the future.

Susan Blumenthal, MD, MPA
Director, Health Innovations Lab, New America
Former U.S. Assistant Surgeon General
Rear Admiral, USPHS (ret.)

Appendix III: USDA Organizational Chart



UPDATED 10/19/21 This organization chart displays the names of USDA offices, agencies, and mission areas. Each office, agency, and mission area is placed within a cell connected by lines to show the structure and hierarchy (Under Secretary, Deputy Secretary, or Secretary) for which they fall under. An HTML version that lists USDA Agencies and Offices and USDA Mission Areas is also available on usda.gov. The Secretary's Memorandum 1076-031 was signed August 12, 2019 effectuating a change to Rural Development.



Appendix IV: Collaborating Organizations

NEW AMERICA

New America is a think tank and civic enterprise committed to renewing American politics, prosperity, and purpose in the Digital Age. It generates big ideas, bridges the gap between technology and policy, and curates broad public conversation, combining the best of a policy research institute, technology laboratory, public forum, media platform, and a venture capital fund for ideas. New America is a distinctive community of thinkers, writers, researchers, technologists, and community activists who believe deeply in the possibility of American renewal. The mission of the Health Innovations Lab at New America is to catalyze the development and implementation of technological innovations to advance health in America and around the world. By linking and synching technological innovations to health, as well as engaging a variety of multidisciplinary experts, we aim to accelerate fundamental changes in the way health care is delivered in the Digital Age and help modernize public health infrastructure including government health and food assistance programs for efficient, equitable and effective client centered service delivery.

MIT MEDIA LAB

Founded in 1985, the MIT Media Lab is one of the world's leading research and academic organizations. Unconstrained by traditional disciplines, Media Lab designers, engineers, artists, and scientists strive to create technologies and experiences that enable people to understand and transform their lives, communities, and environments. The MIT Media Lab promotes an interdisciplinary research culture that brings together diverse areas of interest and inquiry. Unique among other laboratories at MIT, the Media Lab comprises both a broad research agenda and a graduate degree program in Media Arts and Sciences. Faculty, students, and researchers work together on hundreds of projects across disciplines as diverse as social robotics, physical and cognitive prostheses, new models and tools for learning, community bioengineering, and models for sustainable cities. Art, science, design, and technology build and play off one another in an environment designed for collaboration and inspiration.

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH, DEPARTMENT OF NUTRITION

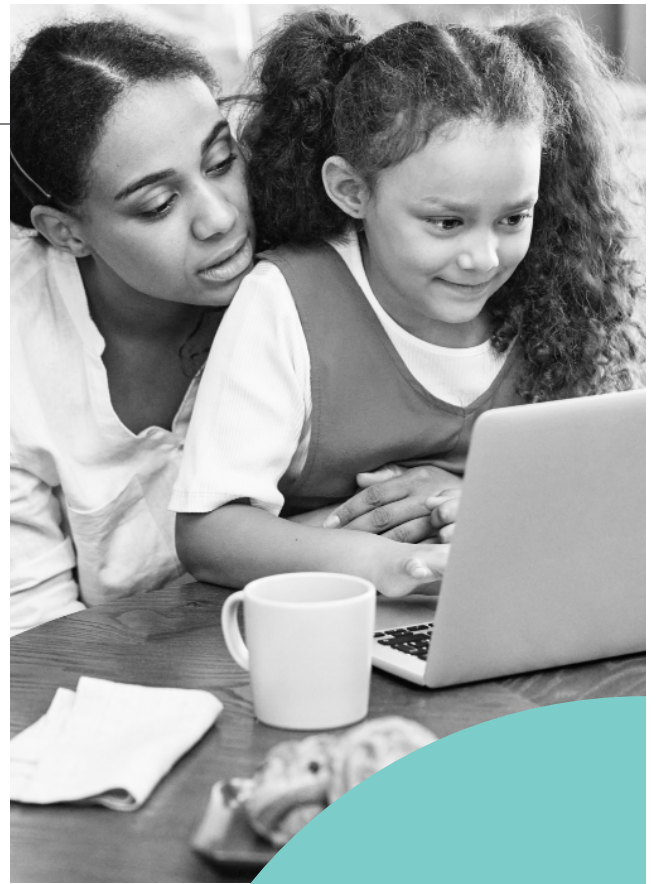
The mission of the Department of Nutrition at the Harvard T.H. Chan School of Public Health is to improve human health through better nutrition and lifestyle. The Department strives to accomplish this goal through research aimed at an increased understanding of how diet influences health at molecular and population levels, the development of nutritional strategies, informing policy, the education of researchers and practitioners, and the dissemination of nutrition information to health professionals and the public.

THE ROCKEFELLER FOUNDATION

The Rockefeller Foundation's mission—unchanged since 1913—is to promote the well-being of humanity throughout the world. A science-driven philanthropy focused on building collaborative relationships, the Foundation identifies and accelerates breakthrough solutions to the world's greatest challenges in order to make opportunity universal and sustainable. In collaboration with its talented and passionate partners, the Foundation's efforts are focused on cultivating transformative change in health, clean energy, food, and economic equity.

AETNA FOUNDATION

The Aetna, based in Hartford, supported projects to promote wellness, health, and access to high-quality care for everyone.





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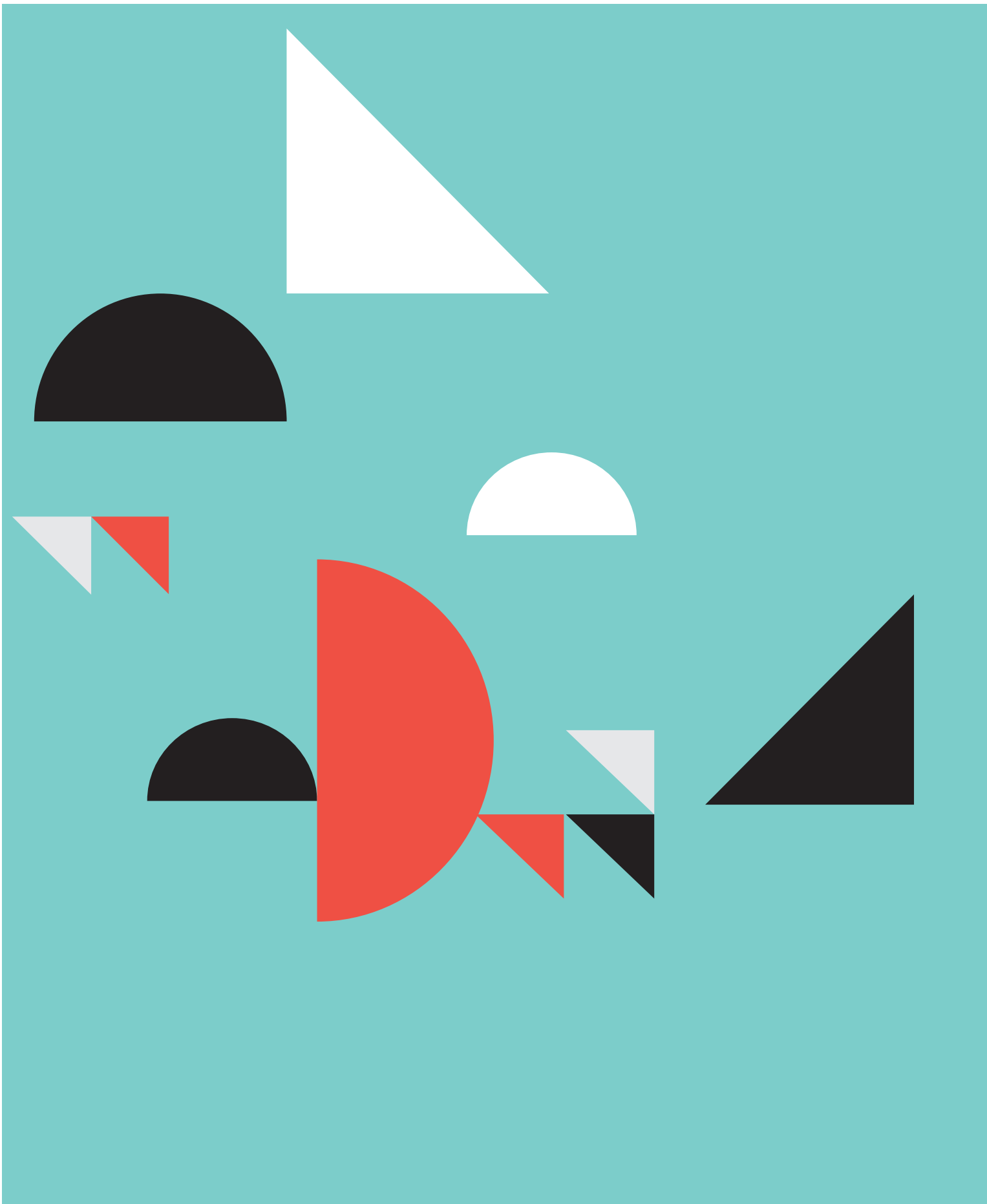
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