

WIC AND FOOD INSECURITY: EBT INNOVATIONS TO IMPROVE NUTRITIONAL HEALTH

BACKGROUND

Conference Goals

There is increasing interest among the public health and technology communities to explore the potential of information technology and social media interventions to strengthen Federal food assistance programs like the Supplemental Nutrition Program for Women, Infants, and Children (WIC) so that they are easier to use, more efficient, serve everyone with dignity, produce better outcomes in reducing food insecurity, preventing obesity, promoting healthy nutrition, recruiting eligible beneficiaries, simplifying the application process, and increasing retention in the program. The goal is to build 21st century government infrastructure for an initiative like WIC that works more effectively, collects data, provides interactive features, and could harmonize with other Federal assistance programs in the future. Such interventions include a reimagining of program systems design and the use of health apps for smartphones and tablets, social and professional networking sites, text messaging campaigns, online support groups, interactive web tools, games, and other Internet resources. Information technology facilitates the flow of health information to the general public and other stakeholders and enables connections between people. It also facilitates the sharing of data for researchers and policy makers. New America will convene a Digital Health Summit at MIT on Sept 5–6, 2017 in collaboration with the Media Lab at the University and the Harvard T.H. Chan School of Public Health to explore innovative strategies to strengthen WIC and better serve its beneficiaries in the years ahead.

Overview

The Supplemental Nutrition Program for Women, Infants, and Children (WIC) was established in 1972 to supplement the diets of low-income pregnant women, infants, and young children at risk of adverse physical or mental health effects as a result of poor nutrition or inadequate healthcare. In 2015, there were 8 million people enrolled in this program with a budget of \$6.1 billion. WIC participants include pregnant, breastfeeding, or postpartum women, infants, and children up to age 5 whose eligibility for the program is determined based on income and “nutritional risk.” The law authorizing WIC, the *Child Nutrition Act of 1966*, includes the following definition of nutritional risk: “(a) detrimental or abnormal nutritional conditions detectable by biochemical or anthropometric measures, (b) other documented nutritionally-related medical conditions, (c) dietary deficiencies that impair or endanger health, or (d) conditions that predispose persons to inadequate nutritional patterns or nutritionally related medical conditions.”³ The program is particularly important for children’s health: three-quarters of WIC participants are infants and children under the age of five.⁴

WIC provides participants with defined “food packages”— monthly allowances to purchase specific foods of particular importance to the health of these demographic groups. Notably, WIC’s defined food package model for beneficiaries has shaped the

food environment by influencing the stocking practices of small retailers, reflecting the program's important and transformative role in health and nutrition policy. WIC also provides nutrition education and serves as an entry point for screening and referrals to other health services.

This critical food assistance program now faces an additional challenge: an obesity epidemic that co-exists with food insecurity in America. One in seven Americans are food insecure, while 70.7% of adults and one-third of children are overweight or obese. These problems are particularly pronounced among people with low income. Currently, seven times as many low-income children are overweight as underweight in America. 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.⁵ Overweight and obese children are also more likely to become obese adults.⁶ As a result of the current obesity epidemic, this may be the first generation of children who are not as healthy or live as long as their parents.

Congressional legislation in recent years has addressed the need to improve nutritional health among children enrolled in Federal food assistance programs. Based on scientific evidence, both policymakers and the public agree that children need proper nutrition to develop, learn, and grow, as well as to prevent obesity. WIC food packages, which had been generally unchanged since the program's creation in 1972, were modified in 2009 to align with the USDA *Dietary Guidelines for Americans*. With this alignment, monthly allowances for some foods (including milk, juice, and eggs) were reduced, while other products (namely fruit, vegetables, and some multi-grain foods) were added to the food package. In 2014, the USDA issued a final rule, marking the completion of the WIC food package revisions begun in 2009. Dollar amounts for purchasing fruits and vegetables increased by 30% and fresh produce (as opposed to canned products) became an acceptable purchase for families with older infants. Additionally, state and local WIC agencies were given more flexibility to meet the cultural and nutritional needs of WIC participants.⁷

Research Barriers in WIC

WIC is among the most studied of all Federal food assistance programs. However, program evaluation has been uneven and complicated by methodological issues.¹ Though such information is vital to analyzing the program's effectiveness and designing future improvements, research examining and evaluating the purchasing behavior of WIC participants has been limited. While just 10% of WIC participants are pregnant women, most research on WIC's impact on nutrition and health has concentrated on the effect of prenatal program participation on their infants' birth outcomes such as weight, preterm births, and gestational age.⁸

Less is understood about the impact of WIC on the nutrition and weight status of children up to age 5 and their mothers. WIC participants are not required to purchase all of the types of foods included in their monthly defined food packages, nor has there been any widespread collection of data on what foods participants purchase. Lack of comprehensive data collection on WIC participants' purchases has been an impediment to evaluating the effectiveness of WIC nutrition education and counseling. According to Federal regulations, WIC State agencies must devote at least one-sixth of their Nutrition Services and Administration (NSA) funds to nutrition education, which consists of individual or group counseling sessions.⁹ However, evaluation of WIC nutrition education programs has largely relied on self-reported dietary recall data from WIC participants, and this data is often characterized by low response rates and errors in respondent recall of food purchases.¹⁰

Unfortunately, due to the complexity of the current, paper-based benefit redemption method, it is difficult to collect meaningful aggregate participant purchasing data to evaluate WIC's role in improving nutrition for women, infants, and children (see Figure 1). Building technological infrastructure to facilitate real-time data collection of the foods and beverages purchased by WIC participants would fill a critical gap in determining WIC's ability to fulfill its purpose of addressing the nutritional needs of low-income women, infants, and children.

There are other challenges in the program. WIC loses a significant proportion of its caseload with a 62% attrition rate from infancy to age 5, underserving the eligible child population in America. Why do so many families stop participating in WIC as their toddler ages? What are the differences between those families with young children who continue to participate in WIC and those who do not? Could purchasing data collected by eWIC help to solve this important question? Might innovative technologies and social media help retain families in this vital Federal food assistance program? Enhanced data collection and research is urgently needed to strengthen the potential of Federal food assistance programs to promote retention, improve nutrition, combat obesity in America, and enhance child development opportunities.

WIC EBT Transition

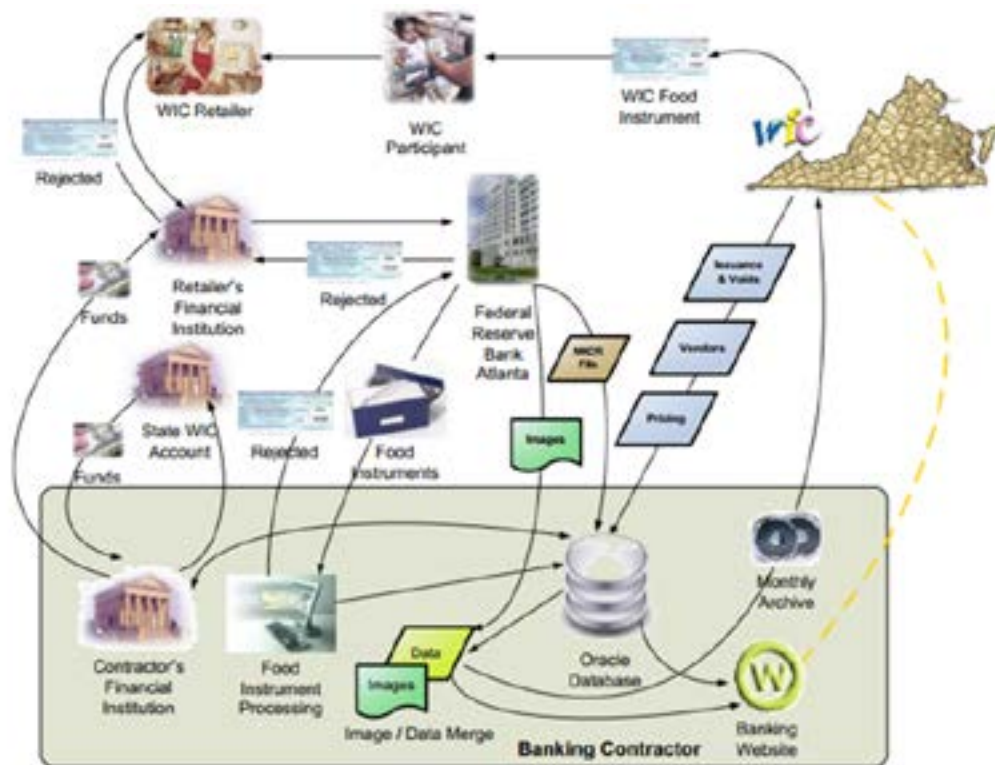
In most states and territories in America today, the primary instrument for providing food benefits in WIC is through paper vouchers/checks, which stipulate the specific food items and quantities that may be purchased by participants at WIC-authorized retail locations. In 2010, the *Healthy, Hunger-Free Kids Act* was passed that requires all WIC agencies to implement electronic benefit technology (EBT) technology by 2020. The paper-based process is to be replaced with electronic issuance, redemption, and payment of WIC benefits, similar to that of the system currently utilized in every state and territory to distribute benefits for the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program. SNAP EBT uses debit card technologies wherein participants are issued magnetic

stripe cards that can be used at point of sale (POS) terminals to purchase food items at authorized locations (see Figure 2). Today, since credit and debit cards are often more prevalent than cash for use by consumers, the EBT card has provided SNAP recipients greater privacy and security in their purchase of foods while minimizing stigma of buying food through this program.

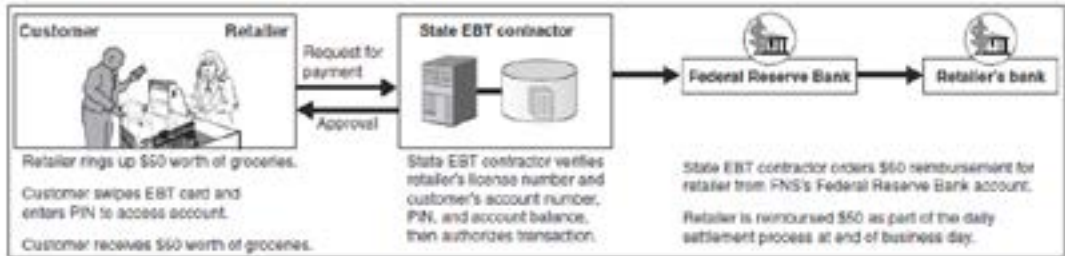
Figure 1. Complexity of Current (Paper-Based) WIC Benefits Redemption Method

Figure 2. Current Limited EBT Functionality Used in SNAP

The transition also requires that each state establish a Universal Product Code (UPC) database of all WIC-approved items. WIC-eligible foods are determined by state WIC agencies and differ from state to state, but the USDA Food and Nutrition Service (FNS) has acknowledged the importance of establishing a central, nationwide database of “core” WIC-eligible items.[11] No such national list of all WIC-eligible foods currently exists.[12] This lack of data and transparency constitutes a significant barrier for researchers who wish to study benefits redemption and food purchasing behavior among WIC participants in order to strengthen the



program, respond to participants' needs, and improve health outcomes including the



prevention of obesity. Thus, the absence of a transparent, standardized, universal EBT system in WIC and SNAP represents missed opportunities to harness the full potential of real-time technology to optimize WIC and SNAP's public health impact.

As of December 2016, 20 states have implemented WIC EBT systems (see Figure 3). With the USDA requirement that all WIC state agencies transfer their operations to EBT by 2020, it is an ideal moment to incorporate EBT "smart" card and other technologies to improve nutrition and public health within this Federal food assistance program.

Figure 3. Map of WIC State Agency Implementation

Addressing Food Insecurity: Applying Technology Innovations

There is increasing interest among the public health and technology communities in exploring the potential of information technology and social media-fueled interventions to help redesign Federal food assistance programs to be simpler,



easier to use, more efficient, and have better outcomes to reduce food insecurity, prevent obesity, promote healthy nutrition, recruit eligible beneficiaries, simplify the application process, and promote retention in programs like WIC. The goal is to build government infrastructure for an initiative like WIC that work more effectively and interact with each other in the 21st century. Such interventions include health apps for smartphones and tablets, social and professional networking sites, text messaging campaigns, online support groups, interactive web tools, games, and other Internet resources. Information technology facilitates the flow of health information to the general public and other stakeholders and enables connections between people. It also facilitates the sharing of data for researchers and policy makers.

EBT “smart” card technology has the potential to be an area for growth and innovation in WIC research. The first proof-of-concept study for using EBT technology to distribute SNAP benefits was conducted in 1991, and since then, the EBT card’s value as a financial transaction tool has been well demonstrated. Since 2004, the nation’s largest Federal food assistance program—SNAP—has required the use of EBT technology for all financial transactions. However, because SNAP EBT cards utilize magnetic stripes, they cannot capture information on the products purchased during a SNAP transaction nor can they provide customer feedback on foods that are bought and how they align with the USDA *Dietary Guidelines for Americans* and MyPlate. In contrast to magnetic stripes, “smart” cards feature an embedded chip that enhances security and collects data, enabling personalized nutritional feedback and collection of aggregate purchasing information that could ultimately improve nutrition education in Federal food assistance programs.

Mobile technology holds great promise to promote health among low-income populations. According to the Pew Research Center, 84% of low-income adults have access to a mobile phone and 1 in 3 mobile phone owners have used their phone to look up health information. Fifteen percent of Americans report that their only method of accessing the Internet is through their cell phones. With over 72% of Americans seeking health related information online within the past year, there are significant opportunities to improve health behaviors through online and mobile resources.^[13] The percentage of smartphone users is expected to rise sharply as the costs for these devices continue to decrease. For example, this year a telecommunications company in India released a \$4 smartphone. With new generations of affordable smartphones, more low-income Americans will have access to online resources in a variety of settings. Whether through an app that tracks food purchases and nutritional content or with personalized text messages containing tips and words of encouragement, information technology can play an important role in innovating Federal food assistance programs and could significantly contribute to improving the health of program beneficiaries and their communities.

There are several examples of personalized interventions that aim to improve nutrition and prevent obesity. One such app called PlateMate allows users to take a photo of a meal pre- and post-consumption and then estimates caloric intake.

^[18] Another app, SNAPFresh, helps participants locate SNAP retailers. While a few WIC shopping apps have recently become available for a select number of states, they only provide information about food eligibility and vendor locations with no nutrition facts or interactive feedback. Additionally, motivational text messages, such as the HEALTHeME weight loss program, are being used to promote weight loss and share healthy habits with program participants.^[17] There are also increasing opportunities to access health tools online, to use wearables like Jawbone and Fitbit, to share results with friends and family, to discuss health issues with other Internet users facing similar medical concerns, and to share best practices among health professionals.

Social media is a critical online marketing and information dissemination tool to improve nutrition among participants. The power of social media to affect business transactions, entertainment and political movements has been demonstrated. However, the full potential of information technology and social media to prevent obesity and promote nutritional health has not yet been fully explored.

The popularity of apps and other social media tools today demonstrates the power that such technology could have on improving health by promoting nutritional behavior change. However, there has not been a systematic exploration of the variety of new information technology approaches or their effectiveness at the individual, community and national levels; nor has there been a full exploration of the potential of social media to promote healthy eating in Federal food assistance programs. Additionally, there is a 62% attrition rate in participation in the WIC program from the birth of an infant to age 5. IT and social media tools could potentially help reduce this rate, simplify enrollment and encourage retention in the program.

Online Education Tools

Although one-to-one counseling is the method employed on the first WIC clinic visit (e.g. "primary" nutrition education [NE] contact), "secondary" (mid-certification) NE contacts have heavily relied on paper and passive viewing (e.g. pamphlets and videos) for client's health education experiences. However, some eWIC state agencies have begun offering online modules for secondary nutrition education encounters. The participant can go online and complete an NE module after which their next three months of benefits is issued automatically (in online eWIC systems) without the client having to return to the clinic. However, high risk WIC clients may not be offered this option. Additionally, child development education could be added to these modules.

In addition, the WIC community has been developing social media messaging to enhance WIC participant education. In 2015, the National WIC Association led the way through the development of a series of YouTube videos targeted to the

WIC audience. However, much more could be done to leverage new technologies (including smartphones, mobile apps, the web and social media) to enhance the quality and effectiveness of WIC nutrition education initiatives as well as provide child development information to new parents.

Mobile Payments (mPay)

In the commercial sector, mobile payments (mPay) are expanding rapidly. While the earliest adoption of mPay at retail point-of-sale (POS) were small merchants like coffee shops and fast food chains^[19], today major chains like Albertsons, Kroger and Wal-Mart have or are planning to implement mPay functionality at their POS. Were mPay to become universal it is possible to envision a migration of eWIC in that direction. The slow pace of conversion to card-based eWIC suggests it would likely be several years before WIC could integrate their new functions in this direction.

Online Purchasing

Online purchasing may be a more likely direction for WIC in the years ahead. The Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA) issued a request for proposals (RFA) in 2017 to conduct a formal evaluation of EBT mobile and online pilots in SNAP and WIC^[20]. These two approaches were authorized by *The Agricultural Act of 2014* (The Farm Bill Section 4011). Recent developments suggest that online food shopping is of significant interest to web marketers as well.

If online shopping is proven effective by these demonstration projects, changes in Federal regulations and policies would need to be enacted to permit WIC online food purchasing and also home delivery of products. Additionally, it is also very important to understand how profits will be linked to advertising on all SNAP and WIC related apps and online ordering functions. Here again policies will need to be put into place to address advertising and other issues that may arise related to online and mobile Federal food assistance shopping experiences.

The Future of WIC EBT and Beyond: The Digital Health Summit

The WIC Digital Health Summit, hosted by New America in collaboration with the MIT Media Lab and Harvard School of Public Health, will explore strategies for how the EBT system could facilitate real-time data collection that would otherwise be almost impossible to gather with the current paper distribution of WIC benefits. The Summit will bring together experts in technology, digital currency, and design

who are unfamiliar with public health challenges such as food insecurity and obesity affecting low-income Americans. The initiative will engage this diverse set of experts and employ their unique talents, perspectives, and expertise in order to craft innovative solutions to merge technological innovation with nutrition education with the goal of enhancing nutrition in WIC. If developed, the technological advancements of the EBT system could revolutionize WIC nutrition education so that participants could view their purchase history on cell phones through mobile apps, on the Internet, or on a store kiosk, through a portal that will provide individualized, personalized feedback and nutrition recommendations based on participants' food purchases (see Figure 4). The development of an interactive WIC app would not only help consumers determine food product eligibility in the store by scanning product codes and smart labels, but it also would provide personalized feedback on nutritional quality, keep a record of purchases, and offer recipes and other interactive features. Ultimately, the real-time data collected by the EBT card would become an important resource for researchers and policymakers to increase knowledge about dietary behaviors in this high-risk population and to design interventions to improve nutrition and decrease obesity for WIC beneficiaries. These innovations might also help transform the nutrition landscape more broadly by reshaping food stocking patterns and individuals' purchasing behaviors.

Figure 4. Illustration of Proposed WIC EBT Innovations

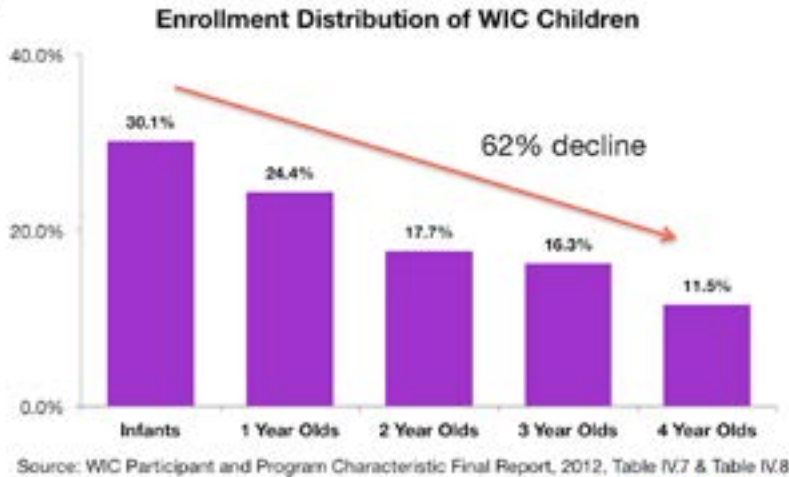
Conclusion

Serving 53 percent of all children in the United States^[21], the WIC Program is an essential and highly effective initiative to promote good nutrition and health for mothers, infants and young children. Research findings have demonstrated that WIC improves birth weight, physical wellbeing and cognitive development for children who participate in the program^[22].

But WIC is now losing some of its caseload and, as illustrated below, underserving the eligible child population in America (see Figure 5).

Figure 5

Why do so many families stop participating in WIC as their toddler ages? What are the differences between those families with young children who continue to participate in WIC and those who do not? Could purchasing data collected by eWIC help to solve this important question? Could innovative technologies and social media help retain families in the Federal food assistance program? These are some of the important research issues that can be potentially answered by implementation of eWIC in all states by 2020 and through the application of new technologies to collect and analyze data collected from the program. Child development and information could be integrated into this program as well.



QuickWIC

Innovation in the Federal Food Assistance programs proceeds slowly but does happen eventually. Considering the rapid proliferation of apps, mobile pay, online purchasing, and social media, there are many emerging technologies that have the potential to significantly improve the WIC client's experience and ease of participation as well as transform nutrition education, provide child development tips and information, and boost the well-being of program beneficiaries in general. Policymakers, researchers, public health practitioners and technology experts alike are strongly encouraged to focus on these new directions for WIC innovation and accelerate their application to further enhance the effectiveness and impact of this vital program serving 53% of young children and their mothers in the United States.

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