

The Association of WIC App Usage and WIC Participants' Redemption Outcomes

Healthy Eating
Research

Research Brief, May 2021

Introduction

The United States Department of Agriculture (USDA) Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is one of the largest federally funded nutrition assistance programs in the nation. It provides free, nutritious food packages, nutrition education, and health interventions to women who are low income or food insecure and are pregnant, breastfeeding, or post-partum; infants; and children up to five years of age. Since WIC was established in 1972, it has been playing a critical role in improving the health and developmental outcomes of its participants.

A core component of the WIC program is to provide free food packages to its participants, which are specifically designed to meet the unique nutritional needs of pregnant, breastfeeding, and post-partum women, infants, and children up to age 5. In each monthly benefit cycle, either a calendar month (e.g., July 1-31) or a rolling month (e.g., July 15-August 14), participants receive a list of prescribed food benefits from the program, such as infant formula, vegetables, and milk, which they can redeem in WIC-authorized stores. To fully meet the program's goal of assisting participants in achieving adequate nutritional intake, participants are expected to redeem all of their free benefits. However, due to barriers encountered by WIC participants in both the retail and WIC clinic environments (i.e., difficulties in remembering the WIC-eligible brand names of food items that are part of the program, unawareness of the benefit expiration date, and difficulty calculating remaining WIC benefits), many participants fail to redeem all of their benefits in each cycle. The percentage of the food benefits that a participant redeems out of their total benefit package is termed the "redemption rate." Research suggests that many participants do not fully redeem their benefits—the most comprehensive study on redemption rates found that across three states, only 12.6 percent of WIC households redeemed all of their benefits in 2012. Because food packages are specially designed to meet participants' unique nutrition needs, low redemption rates decrease the effectiveness of the program. Moreover, those participants who under-redeem their benefits because of issues such as not being able to find eligible foods may be more likely to drop out of the program, reducing their overall health and nutrition.



To improve the efficiency of benefit redemption, most WIC state agencies implemented the electronic benefit transfer (EBT) system by October 2020, which was required through a provision in the Healthy Hunger-Free Kids Act of 2010. EBT is an electronic system in which paper vouchers are replaced with a card that allows food benefits to be easily issued by WIC and redeemed by participants. Each person's prescribed benefits are loaded onto their EBT card at the beginning of a benefit cycle. Participants then use the card (like a debit card) in-store to redeem their benefits. Based on the EBT system, new technology innovations have been developed and adopted to further facilitate benefit redemption. In particular, state agencies are adopting WIC apps that participants can use to check their benefits, set reminders for their clinical appointments, or complete nutrition education. Although WIC apps have already been used by millions of WIC participants, the effectiveness of this significant innovation has never been systematically evaluated. It is unclear whether the participants who use a WIC app have a higher benefit redemption rate than those who do not.

To fill this knowledge gap, this brief presents the evidence from a recent evaluation of the effectiveness of the WICShopper® app in West Virginia¹ and Kansas. The WICShopper® app provides multiple functions to assist participants in benefit redemption, such as scanning the bar code on the food package to check whether the food is WIC eligible and checking participants' benefit balance. It is not a purchasing app and cannot be used to actually redeem benefits. To date, WICShopper® has been adopted by 32 of the 90 total WIC state agencies in the country. West Virginia was one of the first three states to adopt the app (in 2013), while Kansas adopted it more recently in 2018.

The Methodology

This evaluation integrated WIC administrative data, EBT transaction data, and WICShopper® app usage data from January 2019 to January 2020 in both states, systematically compared the redemption outcomes between participants who used the app and those who did not, and examined the impact of app usage on participants' redemption outcomes across 18 WIC food categories. This was the first WIC app evaluation study based on more than one state's WIC EBT data. The redemption rate was calculated as the redeemed benefits divided by the prescribed benefits per benefit cycle for app users and non-app users ($R_{\text{app user}}, R_{\text{non-app user}}$). The relative difference rate was defined as $(R_{\text{app user}} - R_{\text{non-app user}}) / R_{\text{non-app user}} \times 100\%$.

The Evidence

- The majority of WIC participants in both West Virginia and Kansas have been using the WICShopper® app, which is available to all participants with voluntary adoption. Kansas shows a higher voluntary app user percentage (80.3%) than West Virginia (72.3%). Further, among app users, participants in Kansas that used the app were slightly more likely to use the app in a given month (89% versus 86%) and used the app on more days of the month (4.3 versus 4.1) compared to participants in West Virginia. Overall, both West Virginia and Kansas WIC app users used the app approximately once per week on average.
- In general, app users showed significantly higher food redemption rates than non-app users in almost all food categories (Table 1). Table 1 also shows the relative difference rate. The relative difference rate varied from 4.8 percent in infant formula to 40.7 percent in canned fish in West Virginia and from 5.6 percent in infant formula to 59.4 percent in canned fish in Kansas.
- Results from both West Virginia and Kansas suggest using the WIC app is particularly helpful for improving redemption rates in low-redemption WIC food categories. Some of the largest improvements in the redemption rate were in categories with the lowest redemption rates among all WIC participants (e.g., fish, infant food meats, and frozen juice). This was true in both states (see highlighted rows in Table 1). In contrast, infant formula was the food category that was the least affected by WIC app usage. Because infant formula is the most-redeemed benefit category among program participants, it's not surprising that the usage of the WIC app produced a less than 10 percent relative improvement.
- For both West Virginia and Kansas, a greater usage of the app by participants (both in terms of a higher percentage of active app usage months and a higher number of active app usage days in a month) was significantly related to a higher redemption rate in all WIC food categories. For example, increasing the percentage of active app usage months out of all months by 10 percent for West Virginia was found to lead to a 0.9 to 4.7 percentage point increase in redemption rates of different WIC food categories (1.3 to 4.3 percentage point increase for Kansas). Similarly, having one additional active app usage day in a benefit month for West Virginia was related to a 0.8 to 3.4 percentage point increase in redemption rates for diverse WIC food categories (0.3 to 2.4 percentage point increase for Kansas).

Table 1.

Redemption rates across different food categories in West Virginia and Kansas (%)

Food Category	West Virginia				Kansas			
	All	Non-App Users	App Users	Relative Difference Rate*	All	Non-App Users	App Users	Relative Difference Rate*
Infant Food								
Infant Cereal	47.3	39.2	49.9	27.3	48.9	42.2	50.2	19.0
Infant Fruits & Vegetables	61.0	53.3	63.5	19.1	61.4	52.5	63.2	20.2
Infant Food Meats	27.4	22.6	28.2	24.8	31.6	21.6	32.8	51.9
Formula								
Exempt Infant Formula	70.4	66.7	71.6	7.3	72.3	66.5	73.9	11.1
Infant Formula	77.9	75.3	78.9	4.8	91.6	87.6	92.5	5.6
Dairy Products								
Cheese	66.2	59.6	68.7	15.3	70.7	60.6	73.0	20.5
Milk: Low Fat	57.6	52.7	59.4	12.7	59.1	52.8	60.6	15.0
Milk: Whole	69.3	63.0	71.3	13.2	75.4	66.5	77.4	16.4
Yogurt	50.5	44.2	52.8	19.5	56.1	47.4	58.0	22.4
Fruits & Vegetables	66.8	59.4	69.5	17.0	73.8	64.5	76.1	17.8
Whole Wheat Bread	39.7	35.2	41.4	17.6	54.7	45.9	56.8	23.7
Breakfast Cereal	48.9	44.4	50.6	14.0	61.5	54.2	63.3	17.0
Canned Fish	47.3	35.1	49.4	40.7	53.2	34.7	55.3	59.4
Eggs	65.7	58.6	68.4	16.7	75.3	64.9	77.8	19.9
Juice								
Frozen Juice	30.8	25.4	32.5	28.0	42.4	30.1	44.5	48.2
Shelf-Stable Juice	56.0	51.0	57.8	13.3	72.6	62.6	75.1	20.0
Peanut Butter /Beans	36.6	32.0	38.4	20.0	54.1	46.2	56.1	21.4
WIC Eligible Nutritionals	49.5	46.6	50.6	8.6	87.7	83.7	88.6	5.7

* $(R_{\text{app user}} - R_{\text{non-app user}}) / R_{\text{non-app user}} \times 100\%$, where R is the redemption rate.

Limitations

This is an initial study to compare the WIC redemption rates of app and non-app users in two states. The results should be interpreted carefully, since no sociodemographic variables were controlled in the analyses. Since other factors affecting redemption may also affect adoption of the app among WIC participants, possible selection bias should be considered while examining the results. Although the gold standard to address self-selection is randomization, the state-wide adoption of the app and ethical or legal reasons make it impossible to randomize the app usage in these two states. However, the team used statistical methods to address the potential selection bias of app usage partially in another study.² The results were in line with the findings in this preliminary study.

Conclusion

This is the first two-state WIC app evaluation in the United States. This study found a significant positive association between WIC app usage and WIC benefit redemption in all food benefit categories in both West Virginia and Kansas. Moreover, the relative improvement in redemption was higher in the food categories with a typically lower redemption rate, such as fish, infant food meats, frozen juice, infant cereal, and yogurt. These results can provide important information for WIC agencies and policy makers that are interested in adopting and maximizing the use of apps to improve overall WIC benefit redemption or the redemption of a certain food category.

Policy Recommendations

Usage of WIC apps may not only help to engage WIC participants by improving their program experiences, but also help them more effectively utilize WIC resources and improve their food package redemptions. The findings discussed in this brief lead to a number of potential actions state agencies could consider regarding how to use WIC apps to improve program delivery and participant benefit redemption outcomes.

- State WIC agencies that have not yet adopted a WIC app may consider doing so to assist their program operations.
- WIC state agencies may add new app functions to improve participants' experiences and redemption outcomes in the WIC program. For example, online order functions may be incorporated in the app to assist participants' redemptions during the COVID-19 pandemic and beyond.
- WIC state agencies could seek to promote more WIC app downloads and usage among WIC participants. To further maximize the benefits of WIC apps, state WIC agencies, app developers, and retail stores should collaborate closely with each other to integrate, update, and share their data in a timely and efficient manner.

Acknowledgement

The authors thank Dr. Denise Ferris, Mr. David Thomason, Ms. Kathy Legg, Mr. Ryan Magee, and other colleagues from West Virginia and Kansas WIC agencies and JPMA, Inc., for data provision and technical support.

Suggested Citation

Zhang Q, Zhang J, Tang C, Park K. The Association of WIC App Usage and WIC Participants' Redemption Outcomes. Durham, NC: Healthy Eating Research; 2021. Available at: <https://healthyeatingresearch.org>.

References

1. Zhang Q, Zhang J, Park K, Tang C. Association Between Usage of an App to Redeem Prescribed Food Benefits and Redemption Behaviors Among the Special Supplemental Nutrition Program for Women, Infants, and Children Participants: Cross-Sectional Study. *JMIR mHealth and uHealth*, 2020;8(10), e20720.
2. Zhang Q, Zhang J, Park K, Tang C. App Usage Associated with Full Redemption of WIC Food Benefits: A Propensity Score Approach. *Journal of Nutrition Education and Behavior*, in press.

About Healthy Eating Research

Healthy Eating Research (HER) is a national program of the Robert Wood Johnson Foundation. Technical assistance and direction are provided by Duke University under the direction of Mary Story PhD, RD, program director, and Megan Lott, MPH, RDN, deputy director. HER supports research to identify, analyze, and evaluate environmental and policy strategies that can promote healthy eating among children and prevent childhood obesity. Special emphasis is given to research projects that benefit children and adolescents and their families, especially among lower-income and racial and ethnic minority population groups that are at highest risk for poor health and well-being and nutrition related health disparities. For more information, visit www.healthyeatingresearch.org or follow HER on Twitter at [@HERResearch](https://twitter.com/HERResearch).

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