

Variation in WIC Cash-Value Voucher Redemption Rates among American Indian Reservation Communities in Washington State

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Abstract

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Background: In 2009, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) food package was revised to include a cash-value voucher (CVV) for fresh fruits and vegetables. While this supplement to the WIC food package provides participants with the resources to purchase healthier foods, there is a potential mismatch to using CVVs when access to fresh fruits and vegetables is limited. Our past research reveals that access to fresh fruits and vegetables on American Indian reservations in Washington State is limited. This study, therefore, evaluated differences in the CVV redemption rate among Washington State participants by comparing the redemption rate of WIC clinics located on federally recognized tribal reservations with non-reservation based WIC clinics. Furthermore, the study evaluated redemption rates for Washington State tribes with low-access to fresh fruits and vegetables compared to those with high access, using proximity of a supermarket to the tribe's reservation land as a measure of access.

Methods: Data were obtained for 212 clinics that provided WIC services in Washington State during 2011. The number of CVVs issued and number of CVVs cashed was divided to obtain the mean percent of CVV redemption for each WIC clinic for both tribal and non-tribal WIC clinics. Amongst tribal clinics, percent CVV redeemed was compared in tribal clinics with supermarkets located within the bounds of the reservation to those without supermarkets.

Results: The redemption rates for WIC clinics located on federally recognized tribal reservations was lower than the rate for clinics located off tribal reservations ($p < 0.0001$). Among tribal WIC clinics, there were no significant differences in CVV redemption rates between tribes who had or did not have a supermarket located within the bounds of the reservation.

Conclusions: Our results indicate that tribal WIC CVV redemption in Washington State is significantly lower than non-tribal CVV redemption. However, it does not demonstrate that tribal WIC clinics have lower CVV redemption rates when a supermarket is located within the bounds of the reservation, compared to not on the reservation. Results of this study suggest the need to address barriers to CVV redemption, specifically in the tribal WIC population.

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Introduction

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) serves millions of low-income families by providing nutrition education, social service referrals, and nutritious foods to supplement their diets. The WIC program was permanently established in 1975, on the basis that pregnant women, infants, and young children are at risk to their physical and mental health due to poor or inadequate nutrition¹. However, over time, health professionals found the WIC food packages to be out of alignment with the needs of WIC families, and the Dietary Guidelines for Americans, and the Institute of Medicine of the National Academies² made recommendations for changes to the WIC food package.

The Food and Nutrition Service of the United States Department of Agriculture (USDA) issued new federal regulations, and in 2009, the Washington State WIC agency revised the state WIC food packages to better meet the nutritional needs of the WIC population. One of the most anticipated changes was the addition of a cash-value voucher (CVV) for fruits and vegetables, included in the monthly food packages for women and children ages one to five years. The CVVs for Washington State are for fresh fruits and vegetables, except for white potatoes and herbs, and have monthly values of six dollars for children and ten dollars for pregnant, breastfeeding, and postpartum women.

Prior to the national implementation of the CVVs, a pilot study found that providing WIC participants with CVVs increased consumption of fruits and vegetables, both during, and six month following the intervention³. Since the implementation of CVVs, studies also reflect an increase in fruit and vegetable consumption in the WIC population⁴. While the addition of checks for fresh fruits and vegetables has improved the diets of some WIC participants, other studies have found potential barriers to redemption of CVVs. In a focus group study of WIC participants enrolled in WIC clinics with both high, and low check redemption rates, Najjar, Johnson and Podrabsky (2013)⁵ found that barriers to using CVVs included the WIC food item not being in stock, not enough time to purchase WIC foods, inability to separate CVV into multiple checks, produce spoilage at home, unfamiliarity with fruits and vegetables, poor quality of produce in stock, and difficulties associated with the calculations required for CVVs.

Despite the barriers to CVV redemption, the WIC food packages improve the environmental determinants of health, by increasing the availability of healthy food selections in urban stores that serve WIC families⁶. However, to date, there has been little research evaluating the changes in the WIC

food packages related to access and the rural food environment. The presence of supermarkets has been shown to indicate larger selections of healthy foods; yet, low-income, minority, and rural communities are more likely to have smaller grocery and convenience stores with fewer selections of healthy foods, as compared to more affluent areas^{7,8}. A study, from 2002, found that blacks consumed 32% more fruits and vegetables for each supermarket located in their Census tract⁹. In general, the literature demonstrates that individuals who shop at supermarkets have better access to healthier diets⁷, and low-income, ethnic minorities tend to have less access to fruits and vegetables than other groups¹⁰. While changes in the WIC food packages are welcome, the question of accessibility needs to be addressed for WIC participants living in areas considered to be food deserts.

Environmental factors, including the food environment, have been shown to be an underlying cause in the rapid prevalence of obesity in the United States¹¹. Alterations in the food packages stemmed in part from the rising obesity rates², and research shows that experiencing poverty or having a low socioeconomic status during childhood is positively associated with being overweight as an adult¹². When gender and race/ethnic disparities are mixed into the relationship they further compound the effects of poverty, related to overweight and obesity¹³.

American Indians are disproportionately affected by chronic disease¹⁴, and widespread poverty¹⁵. The National Center for Health Care Statistics finds that nearly 37% of American Indian children ages two to five years are overweight or obese¹⁶, and the prevalence of overweight and obesity in American Indian adults is higher than the rates for all other races combined¹⁷. Furthermore, American Indians living on rural reservation communities often rely on nutrition assistance programs for food purchases¹⁸, and frequently purchase their food from small grocery or convenience stores, because they are the most accessible food store type, yet these types of stores often have limited availability of high-quality produce¹⁹.

In 2011, the Wisconsin State WIC program published a report entitled, *The Effects of Changes in WIC Food Packages on Redemption*²⁰. The report found that non-Hispanic American Indian/Alaskan Natives had the highest non-use rate of CVVs, and the lowest full-use rate of CVVs among all ethnic groups. Additional findings revealed that non-Hispanic American Indian/Alaskan Native WIC clients reported that cashiers often would not allow use of their CVVs beyond the dollar amount printed on their check. However, the Wisconsin WIC Program state rule permits WIC participants to pay for fruits and

vegetables beyond the amount listed on their checks, thus encouraging the increased purchase of fruits and vegetables. The changes to the WIC food package might equate to increased consumption of fruits and vegetables for some WIC participants, however, others might experience barriers to using their checks, specifically with regards to access to fresh fruits and vegetables.

A study entitled, *Food Access and Cost in American Indian Communities in Washington State*, by O'Connell, Buchwald and Duncan (2011)²¹ measured food access and cost on reservation communities in Washington State, using the Thrifty Food Plan market basket tool, developed by the USDA²². Along with availability and price of market basket food items, the type of store (i.e., supermarket, grocery, or convenience), location, and number of stores by type was determined. As seen in Figure 1²³, reservations are dispersed throughout the state and vary widely in acreage. O'Connell et al. found that the average distance to a supermarket for all tribes was 11.1 miles (range = 0.4 to 44.4 miles). The results of the O'Connell study indicated that American Indian tribes in Washington State without a supermarket located on the reservation have limited access to foods represented in the Thrifty Food Plan market basket, including fresh fruits and vegetables²¹.

The present study examined the CVV redemption rates for all Washington State WIC clinics in 2011, with a specific focus on tribal WIC programs as compared to non-tribal WIC clinics. The study aims were to 1) Examine the CVVs redemption rates among tribal and non-tribal WIC clinics, based on being located on a federally recognized American Indian Reservation; and 2) Examine differences in CVV redemption rates between tribal WIC clinics, which do and do not have a supermarket located on their reservation lands.

Methods

This was a secondary cross-sectional analysis of two data sets. The primary aim was addressed using data from the Washington State Department of Health WIC Program, which provided CVV redemption rate data for all 212 WIC clinics throughout Washington State in 2011. WIC clinics were separated by virtue of being tribal or non-tribal. In Washington State there are 29 federally recognized tribes, seven are landless, which leaves 22 tribes with tribal reservations. Phone call inquiries to all of the tribal WIC clinics identified whether or not a WIC clinic was physically located on the reservation. Of the 22 tribes with reservations, 21 have WIC clinics on their lands and several of the tribes had multiple WIC clinics. In

the state of Washington, there were a total of 27 WIC clinics located on federally recognized reservation lands, and 185 WIC clinics not located on federally recognized reservation lands.

The CVV redemption rate data for WIC clinics was calculated using the number of checks issued per month at each clinic and the number of checks cashed per month at each clinic. The number of checks issued and number of checks cashed for each WIC clinic were summed for the year. A mean monthly CVV redemption rate for each WIC clinic was determined by dividing the number of checks cashed, by the number of checks issued for each clinic, generating the annual redemption rate for every WIC clinic. Clinics were then labeled as being tribal or non-tribal. A difference in CVV redemption rate between non-tribal and tribal WIC clinics in Washington State was hypothesized.

To address the second aim of the study, the WIC CVV data were matched with food access data from O'Connell (2011), separating tribes without supermarkets from those with supermarkets. As previously mentioned, food access data characterized the nutrition environment of American Indian reservations in Washington State using the USDA Food Security Assessment Toolkit, Food Store Survey Instrument market basket²². The data from O'Connell (2011) were collected between April and May 2009; 16 tribes in Washington State did not have a supermarket on their reservation, and five tribes had supermarkets located within the bounds of the reservation. Using data from two different time periods was justified based upon the assumption that access to food remained unchanged. One of the tribes that O'Connell visited did not have a designated WIC clinic, and therefore, was not included in the CVV redemption data; this tribe did not have a supermarket located on their reservation. It was hypothesized that there would be a difference in the percent of CVV redeemed, based upon O'Connell's 2011 study, documenting limited availability of fresh produce for tribal reservations without supermarkets.

Data Analysis

To address the primary aim, a two-sided, independent samples t-test at the 0.05 alpha level was used to test for differences between tribal and non-tribal clinics. Distribution of data was shown using the Tukey box plot. In addressing the secondary aim, there were 10 WIC clinics located on reservations with supermarkets and 17 WIC clinics located on reservations without supermarkets; these were compared against each other. A two-sided, independent samples t-test at the 0.05 alpha level was used to test for differences between tribes with and without supermarkets. Tukey box plots were used to show

distribution. All analyses were conducted using Stata13.

Results

The distributions of non-tribal and tribal WIC CVV redemption rates are shown in Figure 2. There were a total of 212 observations with six non-tribal clinics missing a complete 12 months of data. The mean percent CVVs cashed for non-tribal WIC clinics was 0.806 and the mean for tribal WIC clinics was 0.652. The correlation coefficient was 0.153, and confidence intervals were 0.126 to 0.181. There was a significant difference between the percent CVV cashed for non-tribal and tribal WIC clinics ($p < 0.0001$).

A comparative analysis of CVV redemption rates for tribes with and without supermarkets on their tribal lands is depicted in Figure 3. All tribal WIC clinics had 12 months of complete data for the 2011 calendar year. The mean percent CVV cashed for tribal WIC clinics with supermarkets was 0.652, and the mean percent CVV cashed for tribal WIC clinics without supermarkets was 0.651. The correlation coefficient was -0.001, and confidence intervals were -0.055 to 0.053. There was no significant difference between the two groups ($p < 0.974$).

Discussion

The primary aim of the study examined differences between tribal and non-tribal WIC clinic CVV redemption rates, and our findings indicate that there are disparities in CVV redemption in Washington State. Although we are not certain as to why tribal WIC clients use their CVVs at lower rates than non-tribal clients, these findings are consistent with the literature on barriers to CVV redemption and food access in the American Indian population in Washington State^{5,20,21}. Barriers to the redemption of WIC checks have been identified in previous studies^{20,24}, and specifically in Washington State, they include cost of produce, unfamiliarity with certain fruits and vegetables, frustration with calculations required to use the CVV, and misunderstandings about how to use CVVs⁵.

In the current study, there were no differences in CVV redemption rates between WIC clinics located on federally recognized reservations with, or without a supermarket. In previous studies, increased distance to a supermarket was associated with lower quality of dietary intake among lower-income pregnant women²⁵. Likewise, Census tract data has found that areas with supermarkets have a 9% lower

prevalence of overweight, and a 24% lower prevalence of obesity compared to Census tracts without supermarkets²⁶.

Indian reservations and trust lands account for 3.24 million acres in Washington State, and as mentioned earlier, there is a great deal of diversity, with reservations ranging in size from 12 to 1,400,000 acres²⁷. One of the reasons we might not have seen a difference in CVV redemption rates among tribes is that many small tribes are located close to urban areas and have easy access to non-tribal supermarkets. On the other hand, having a supermarket on one part of the reservation is associated with access for tribal members located in the vicinity of the supermarket, but it might not equate to access for those located farther away from the supermarket.

Limitations. There were six WIC clinics with between two to ten months of data available, most likely because the clinics either closed or opened partway through the year. Data were aggregated and percentages by number of observations (i.e., months), rather than actual numbers were calculated, so this should not have had an impact on the results. Since the environmental data by O'Connell (2011) was gathered in 2009, there is a possibility that some of those stores may have closed prior to 2011 when the CVV redemption rate data was collected, or new stores might have opened. Moreover, research documenting the changes in store stocking of the new WIC foods has shown that there was increased access to fresh fruits and vegetables²⁸, which could have confounded results.

Additionally, several of the reservations in Washington State span many miles. In the study by O'Connell (2011), it was found that there were a total of nine supermarkets in operation on reservations, and of the nine supermarkets, five of them were located on the same reservation, leaving the other four reservations with only one supermarket. Therefore, having a supermarket on a reservation might be associated with having access for the reservation with multiple supermarkets, but might not necessarily be associated with access for other larger reservations with only one supermarket. Similarly, there are likely reservations that have supermarkets right outside of the bounds of the reservation, which might then provide greater access to fresh produce. However, it was beyond the scope of the study to use a geographic information system to determine exact locations of stores and WIC clinics. Due to the extremes in WIC clinic sizes throughout the state, there were a significant number of outliers.

Conclusions and implications. The findings of our study add to the limited research on tribal WIC programs, and specifically CVV redemption rates among them. Our results indicate that CVV redemption rates among tribal WIC clinics in Washington State are significantly lower than CVV redemption rates among non-tribal WIC clinics. However, it does not demonstrate that tribal WIC clinics have lower CVV redemption rates when a supermarket is located within the bounds of the reservation, compared to not on the reservation. Access to fresh produce may still be an issue for some American Indian tribes across the state, given that even among those tribes with a supermarket on their reservation land, the average distance to a supermarket was 11.1 miles (range = 0.4 to 44.4 miles)²¹. Thus, it is still reasonable to suggest that more efforts should be aimed at addressing these environmental and/or geographic disparities. The data does suggest that efforts should be aimed at determining why CVV checks are not being redeemed as much as they should be among tribal WIC clinic participants beyond merely access issues, such as unfamiliarity with certain fruits and vegetables, frustration with calculations required to use the CVV, and misunderstandings about how to use CVVs⁵.

Results of this study suggest the need to address barriers to CVV redemption, specifically in the tribal WIC population. The WIC food package has been shown to replace less healthful foods in the diets of WIC participants²⁹, and without WIC benefits, low-income shoppers have been found to be less likely to purchase WIC-approved foods due to perceived barrier of cost³⁰. Improving the use of WIC fresh fruit and vegetable checks would not completely attenuate the healthy food access gap for tribal WIC clients, however, future research and interventions are needed to increase CVV redemption in this population.

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Figure 1. Map of federally-recognized tribal reservations in Washington State. Black shaded areas represent tribal lands.

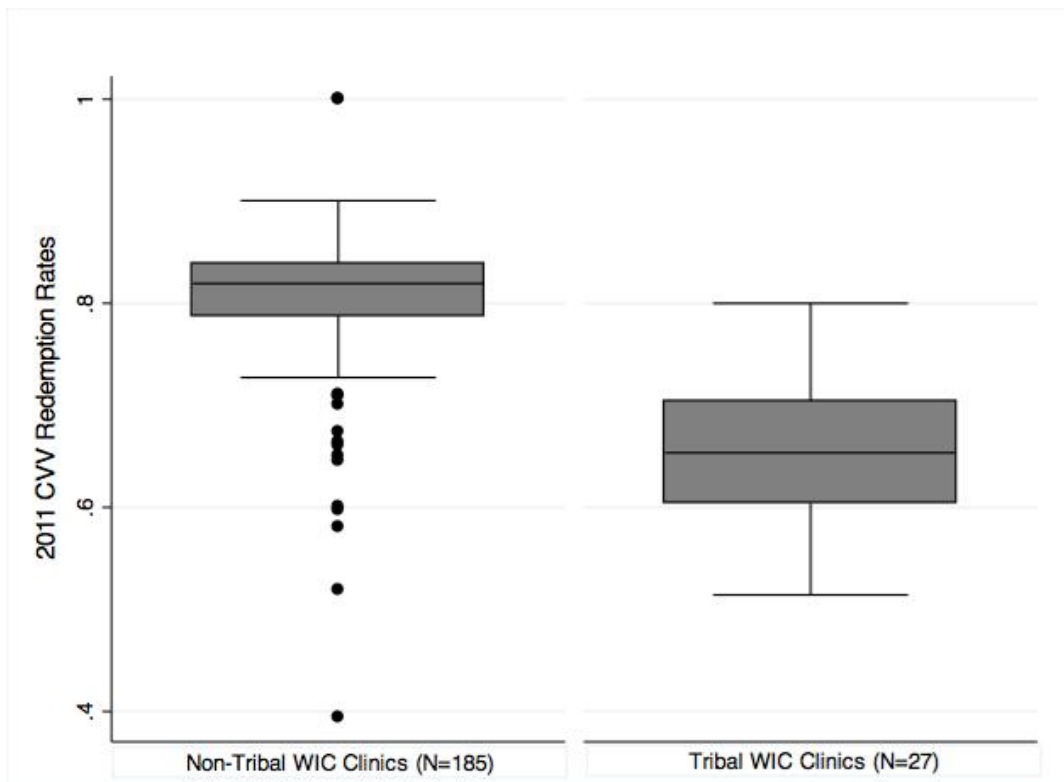


Figure 2. Distribution of cash-value voucher (CVV) redemption rates for non-tribal and tribal Special Supplemental Nutrition Program for Women, Infants and Children Program (WIC) clinics over the 2011 calendar year.

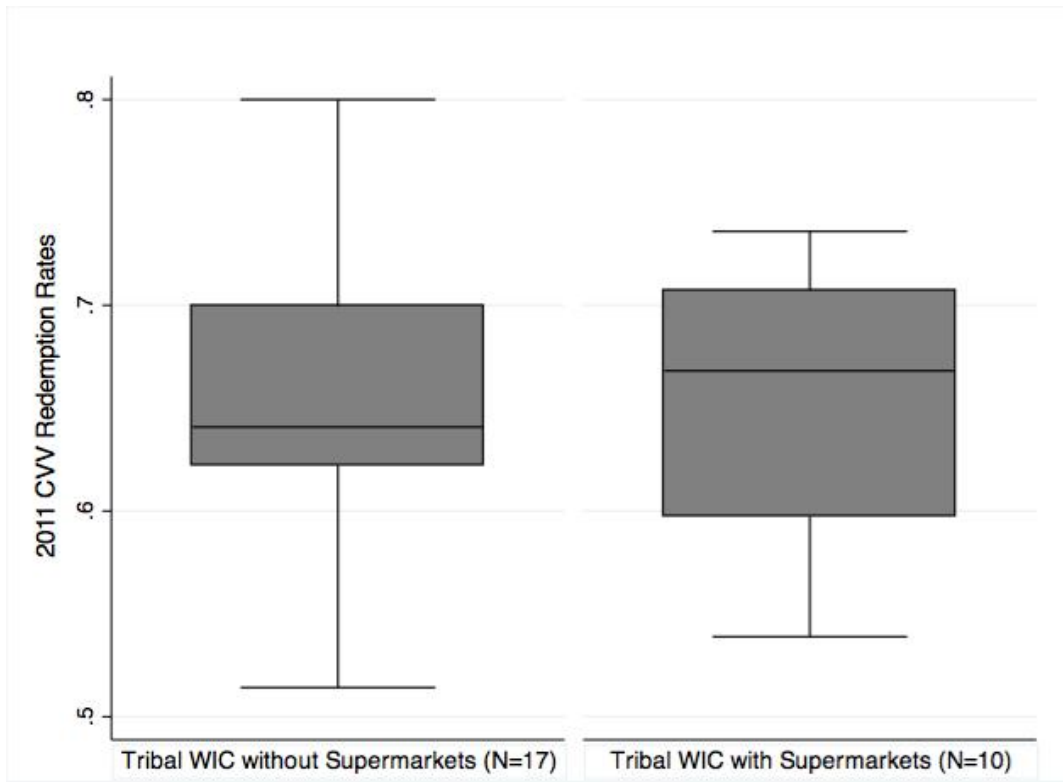


Figure 3. Distribution of cash-value voucher (CVV) redemption rates for tribal Special Supplemental Nutrition Program for Women, Infants and Children Program (WIC) clinics with and without supermarkets located on their reservation for the 2011 calendar year.