WiFi and WIC: Examining the Relationship Between Broadband Availability and WIC Participation

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Motivation

The USDA Special Supplemental Nutrition Program for Woman, Infants, and Children (WIC) provides healthy foods and nutrition education to women, infants, and children who are nutritionally at-risk and living in households at low incomes.

WIC reached 57 percent of its eligible population in 2019 (FNS, 2021). Coverage is highest among infants (98 percent) and then declines as children age.

WIC is expanding online activities such as WIC websites or apps to improve service provision.

Some participants may be better positioned to take advantage of online services than others. In late 2019, 17 percent of the rural population lacked availability of fixed terrestrial broadband service compared to 1 percent of urban people (FCC, 2021).

Current study investigates how broadband internet availability shapes opportunities for families to benefit from WIC services.

Approach

We use descriptive analyses and econometric techniques to examine the relationships between broadband availability and WIC participation and benefit redemptions and consider how these relationships differ across the urban-rural continuum.

Data

Administrative records of WIC participation from up to 14 WIC State agencies from 2015 to 2019 are available from the Next Generation Data Platform (U.S. Department of Commerce, Bureau of the Census; USDA, Economic Research Service (ERS); and USDA, Food and Nutrition Service).

Administrative records of WIC food package benefit redemptions from up to four State agencies for 2019 (Old Dominion University).

Federal Communications Commission data on broadband availability at Census block level.

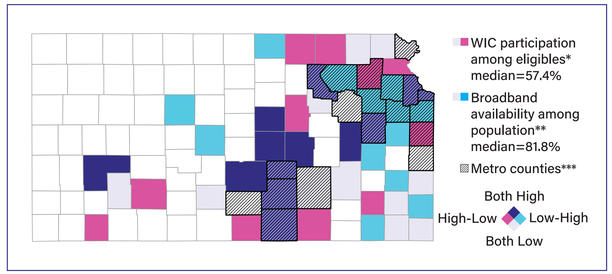
Rural Urban Continuum Codes from USDA, ERS.

American Community Survey Micro Data from Census Bureau.

Linking Broadband Availability to WIC Participation and Redemptions

Figure 1

Broadband availability and WIC participation

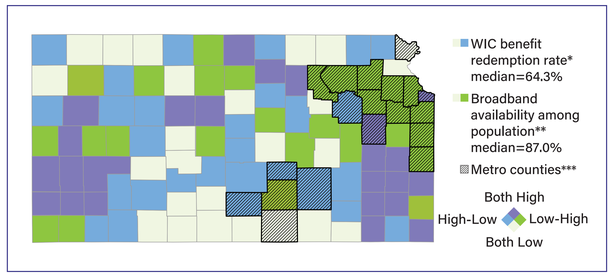


Notes: * The percentage of eligible infants and children participating in WIC from 2017 to 2019. ** The percentage of the population with broadband availability at a minimum threshold speed of 25 mbps/3 mbps in December 2016. *** Official Office of Management and Budget metro and nonmetro categories. No data on WIC participation available for blank/white counties.

Sources: USDA, Economic Research Service; Federal Communications Commission; and U.S. Department of Commerce, Bureau of the Census. All estimates are approved for release by the Census Bureau's Disclosure Review Board (CBDRB-FY19-167, 553, and 575; CBDRB-FY20-154; CBDRB-FY21-108).

Figure 2

Broadband availability and WIC benefit redemptions



Notes: * WIC benefits redeemed as percentage of WIC benefits issued. ** The percentage of the population with broadband availability at a minimum threshold speed of 25 mbps/3 mbps in December 2018. *** Official Office of Management and Budget metro and nonmetro categories.

Sources: USDA, Economic Research Service; Federal Communications Commission; and the Kansas WIC Program.

Preliminary Results

Table 1

Examining the relationship between broadband availability and household WIC benefit redemption rates

	Dependent variable: Redemption rate		
	(1) +Household-level covariates	(2) +County size and urban/rural classification	(3) +County-level covariates
Broadband availability More than 90 percent of county population lives in an area where there is at least one broadband provider	0.012*** (0.002)	0.008*** (0.003)	0.004 (0.003)
Constant	0.592*** (0.007)	0.690*** (0.045)	1.063*** (0.119)
Observations	42,648	42,648	42,648
Log likelihood	1,880.000	1,887.000	1,929.000
Akaike information criterion	-3,738.000	-3,744.000	-3,810.000

Note: Household covariates include race and ethnicity; whether the household had an infant, child, or woman participant; number of WIC participants; and income. County-level covariates include urban or rural classification, total population, land area, water area, share of population under age 5, racial and ethnic composition of population, education composition of population, unemployment rate, and median income relative to state median income.

*p<0.1; **p<0.05; ***p<0.01

Source: USDA, Economic Research Service analyses using data from the Kansas WIC Program.

In Table 1, we consider how household and county characteristics, including broadband availability, are related to the proportion of benefits that a WIC household redeems.

- When we adjust only for household characteristics (column 1), we observe that households redeem a larger proportion of their benefits in counties where 90 percent of the population lives in an area with at least one broadband provider offering minimum speeds of 25 mbps/3mbps.
- When we adjust for household characteristics, county land and water area, population size, and whether the county is classified as urban or rural (column 2), we observe that the association between broadband availability and benefit redemptions remains positive and statistically significant.
- When we adjust for household characteristics and a full set of county characteristics (column 3), the direction of the association remains positive, but the coefficient on broadband availability attenuates and is no longer statistically significant.

Policy Implications

The American Rescue Plan Act of 2021 provided USDA with $390 million to carry out WIC outreach, innovation, and program modernization efforts.

Understanding how the characteristics of local communities, particularly local infrastructure such as broadband availability, are related to WIC participation and benefit redemptions can inform WIC program modernization efforts.

Next Steps

Difference-in-differences research design using two-way fixed effects models to estimate the average effect of a census-block level change in broadband availability on a change in the level of WIC participation.

Instrumental variables research design using two-stage least squares to estimate local average effect of broadband access (having broadband because it is available) on household WIC participation.

Consider alternative data sources for broadband availability/internet connectivity, such as Ookla® data.

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