

An Evaluation of Ethnicity and Linguistic Backgrounds as WIC Food Selection Determinants

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The federally funded Women, Infants, and Children (WIC) program issues redeemable food instruments (or vouchers) to low-income mothers and their small children who demonstrate nutritional need. Not all such food instruments are actually redeemed. Both ethnicity and home language preferences were found to be significantly correlated with individuals' WIC food instrument redemption likelihood. However, these correlations provided little indication that any food type (except cheese for Asians) is more or less culturally acceptable to any particular ethnic or language group. Regardless of ethnicity, persons who show English as their family language preference tend to have lower food instrument redemption rates than do those who prefer to speak any other language, at least among family members. This redemption rate disparity indicates that, to induce participants to follow dietary guidelines consistent with general public health goals, even a food assistance program, such as WIC, needs to employ some marketing techniques. Use of the English language should be a major consideration in segmenting WIC markets.

Background

The Women, Infants, and Children (WIC) Supplemental Nutrition Program provides food supplements and nutritional education for women who are pregnant, are breastfeeding, or have just had a baby, as well as for children who are under 6 years of age (Food Research and Action Center). Funded by the U.S. Department of Agriculture (USDA), applicants must meet certain income and health-risk criteria to be eligible for this program (Owen and Owen, 1997). Based on various studies, the USDA has estimated that every dollar spent for WIC saves three dollars of public Medicaid funds (USGAO, 1992). As this program developed in California, the Integrated Statewide Information System (ISIS) collected extensive data on WIC participants, including family size, income, ethnicity, home language preference, health history, and special nutrition needs. WIC clinic staff enters data directly into ISIS as they interview applicants. ISIS then creates or updates all records and, if the applicant is found eligible, prints out appropriate food instrument (or voucher) packages. Examples of foods that are provided by WIC are milk, cheese, cereal, peanut butter, beans, eggs, juices, and baby formula. WIC has contracts with grocers to accept the food instruments as payment for approved food items. The food instruments can then be deposited as checks in banks. Unlike food stamps, an ISIS-generated WIC food instrument states the specific food type and amount for which it is redeemable,

serving as a permanent record of what has been purchased. ISIS also tracks food instrument issuance and redemption, facilitating computation of redemption rates.

Objectives

In this paper, WIC data are used to examine how participants' ethnicity or home language preferences correlate with their food redemption rates, by food type. A redemption rate is defined as the percentage of WIC-issued instruments or vouchers that are actually redeemed at grocery stores. Possible implications of any such redemption rate correlations will then be discussed. One reason that issued food instruments are not fully redeemed is that certain food items are not normally consumed by some cultural groups served. Also, home language preference can be a measure of assimilation into American culture that could affect food availability and thereby WIC food redemption rates. Identifying such redemption patterns would help WIC modify food instrument packages, delivery systems, and promotion patterns to more closely meet its participants' needs and preferences, thereby encouraging adherence to food intake recommendations. Obviously, these recommendations need to be followed for desired health benefits and public cost savings to be achieved.

Methodology

WIC food instrument redemption rates (as reported by ISIS) for February 1999 are shown by ethnicity, language preference, and food type in Table 1.

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Table 1. California WIC Food Instruments Issued and Percent Redeemed, by Ethnicity, Language Preference, and Food Type, February 1999.

Parameter	Milk		Cheese		Cereal		Peanut Butter		Beans		Eggs		Juice	
	Inst. Issued	Pct. Red.	Inst. Issued	Pct. Red.	Inst. Issued	Pct. Red.	Inst. Issued	Pct. Red.	Inst. Issued	Pct. Red.	Inst. Issued	Pct. Red.	Inst. Issued	Pct. Red.
<i>Ethnicity</i>														
Asian	39,931	95	19,589	82	18,792	91	13,140	88	5,473	88	19,205	96	26,899	94
African American	31,819	86	15,357	88	14,166	85	10,003	79	4,790	74	15,401	90	14,993	90
Hispanic	417,333	95	210,487	95	192,412	92	90,000	88	115,040	90	213,928	96	229,448	94
Native American	2,788	85	1,402	88	1,311	82	1,017	76	387	69	1,439	88	1,102	83
White	45,405	91	21,933	92	20,465	88	17,075	84	4,939	76	22,415	91	17,705	90
<i>Language Preference</i>														
Armenian	830	93	417	95	400	90	148	84	262	87	420	97	584	94
Cambodian	2,367	97	1,126	89	1,075	97	874	91	197	87	1,130	98	1,621	98
Chinese	6,359	95	3,020	78	2,941	90	1,679	94	1,226	93	3,033	96	4,633	93
English	183,703	90	90,906	91	84,215	87	59,409	83	28,977	80	92,459	93	85,297	90
Hmong	9,307	98	4,915	89	4,748	96	2,932	92	1,707	96	4,949	98	6,883	96
Laotian	625	96	300	83	292	95	254	82	37	70			457	95
Mein	371	96	171	77	170	92	147	84						
Other			215	86			111	90						
Punjabi	276	95	138	86	124	87			74	76	139	86	182	82
Russian	1,451	98	775	98	707	95	597	93	219	88	810	98	1,018	97
Spanish	324,363	96	163,379	96	149,123	93	62,577	89	97,101	92	165,996	97	184,105	95
Tagalog	76	84												
Vietnamese	7,548	95	3,406	75	3,351	89	2,507	88	829	82	3,452	97	5,367	94

Source: ISIS data, food instruments with readily identifiable participant ethnicity, see text.

The *Statistical Analysis System (SAS®)* categorical modeling procedure (CATMOD) was used to estimate the degree to which ethnicity and family language preference might affect a WIC participant's propensity to redeem a food instrument, based on this ISIS data (SAS Institute, Inc., 1989).

CATMOD uses a form of linear regression analysis that estimates parameters for categorical dependent variables based on categorical independent variables. This particular model was designed in such a way that an estimated parameter's sign would indicate whether the presence of a given ethnicity or language preference would be associated with a greater or lesser redemption likelihood of a food instrument. Parameters estimated by CATMOD are then used as guides for further investigation.

Observations

The parameter values that were estimated from February 1999 California WIC food instrument redemption data are summarized in Table 2. Parameters for both ethnicity and language preference were frequently found to be significant as determinants of food instrument redemption likelihood.

Additionally, there does not seem to be much sign variation between significant parameters for ethnic groups; if one ethnic group is found less likely than other ethnic groups to redeem a certain food type, that ethnic group will probably be less likely to redeem other food types as well. Parameters for African Americans, Native Americans, and Whites tend to be negative while parameters for Asians and Hispanics tend to be positive. One major exception to this rule is the cheese parameter for Asians. Figure 1 shows February 1999 California WIC food redemption rates for various food types by participant ethnicity. A line graph is unusual for categorical data, but in this case, it serves the purpose of tying ethnic group redemption levels together to form a pattern for comparison with other ethnic groups' patterns. Such patterns all show lower redemption rates for peanut butter and eggs than for other food types, regardless of ethnicity. If any lines on the chart in Figure 1 cross, there would be evidence that one ethnicity's redemption rate *varies differently between food types than other ethnicities' redemption rates*, indicating a cultural difference in cer-

tain food type preferences. This situation occurred only in the case of Asian cheese redemption.

Of all home language preferences, English is associated with more significant negative redemption parameters than is any other language (Table 2). Across all considered food types, primarily English-speakers have consistently lower redemption rates than limited English-speakers (Figure 2). For the purposes of this study, a limited English-speaker is defined as a WIC participant who identified some language other than English as his/her primary home language; this does not mean that s/he does not speak English at all. It probably does mean that English is more difficult for him/her than his/her primary home language is.

Figure 3A is the same as Figure 1, except that the lines for Hispanics and non-Hispanic Caucasians (whites) are darkened. The area between these darkened lines shrinks considerably in Figure 3B, where only primarily English-speaking WIC participants are counted. This situation suggests that primarily English-speaking Hispanics have redemption patterns much more like those of whites than their limited English-speaking counterparts. With the exception of the special case for cheese, this situation exists for primarily English-speaking Asians vis-à-vis limited English-speaking Asians.

The Asian cheese redemption deficit and the higher redemption rates of limited English-speakers continued in months following February 1999. However, in May 1999, the California WIC program began issuing "combination" instruments, where one instrument could be redeemed for three food types—milk, cheese, and eggs. This combination instrument would force a participant to take some cheese. This might induce the Asian participant families to eat it, especially given their general acceptance of other dairy products, such as milk. But, at present, there is no indication that actual Asian consumption of WIC cheese has changed.

Interpretation

It seems apparent that a major redemption determinant is whether or not the WIC participant speaks English at home. Discussion with local (county) WIC agency personnel has revealed the following consensus as possible explanations for the dichotomy of redemption rates between primarily English-speakers and limited English-speakers:

Table 2. Estimated Parameters for Ethnicity and Language Preference as They Affect California WIC Food Instrument Redemption Probability.*

Parameter	Milk	Cheese	Cereal	Peanut Butter	Beans	Eggs	Juice
<i>Ethnicity</i>							
Asian	0.0306	-0.0689	0.0161	0.0287	0.0457	0.0285	0.0833
African American	-0.0327	-0.00258	-0.00947	-0.023	-0.0207	-0.0123	0.0142
Hispanic	0.0249	0.0435	0.0185	0.0221	0.0607	0.0276	0.0163
Native American	-0.0359	-0.00616	-0.0416	-0.0532	-0.0752	-0.0396	-0.0594
White	-0.0131	-0.03414	-0.01647	-0.0254	0.0105	0.0042	0.0544
<i>Language Preference</i>							
Armenian	0.00171	0.0181	-0.0236	-0.047	0.0631	0.0374	0.106
Cambodian	0.0247	0.0635	0.0502	0.026	0.00858	0.0207	0.00778
Chinese	-0.00174	-0.051	-0.0181	0.0469	0.0688	-0.00477	-0.0365
English	-0.0298	-0.0134	-0.045	-0.0462	-0.0512	-0.0205	0.00387
Hmong	0.0267	0.0558	0.0461	0.0272	0.0966	0.0172	-0.0124
Laotian	0.00887	-0.00417	0.0305	-0.0654	-0.1567		-0.0182
Mein	0.0154	-0.0589	-0.000478	-0.0515			
Other		-0.011		0.0644			
Punjabi	-0.00388	0.0242	-0.0472		-0.1027	-0.1081	-0.1458
Russian	0.0459	0.0429	0.0333	0.0448	0.0734	0.0486	0.1372
Spanish	0.0151	0.0138	0.00718	0.0127	0.0429	0.00637	0.0468
Tagalog	-0.1074						
Vietnamese	-0.00444	0.07983	0.032902	0.0119	0.04278	-0.0031	0.08875
English/Asian**							-0.0636

*February 1999 data; boldface indicates significance at 95 percent confidence level; negative value is associated with lesser probability of redeeming a given food instrument; positive value is associated with greater probability of redeeming a given food instrument.

**Interaction.

Source: ISIS data, see text.

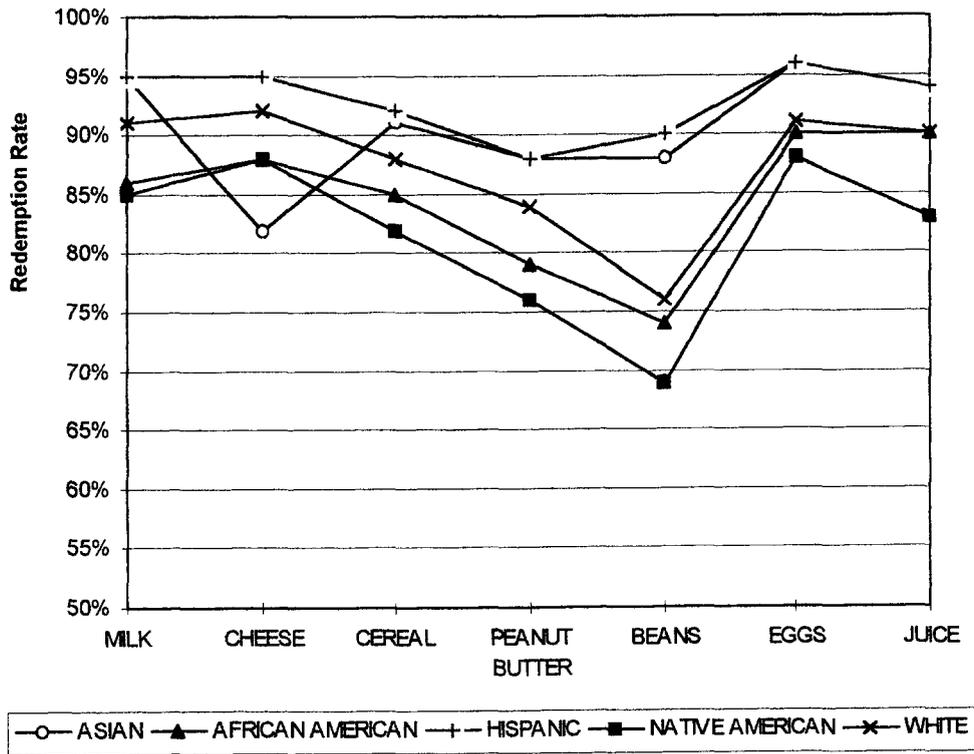


Figure 1. California WIC Food Instrument Redemption Rates by Ethnicity, February 1999.

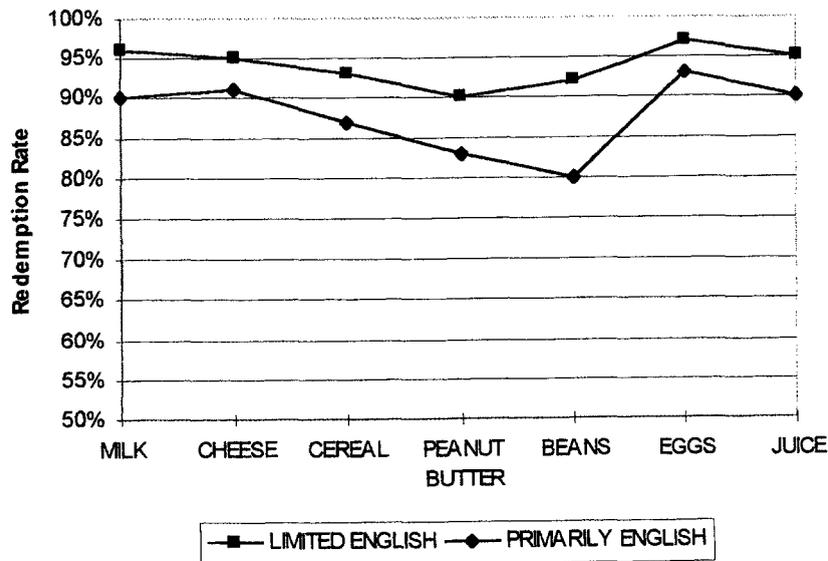


Figure 2. California WIC Food Instrument Redemption Rates for Primarily English Speakers and Limited English Speakers, February 1999.

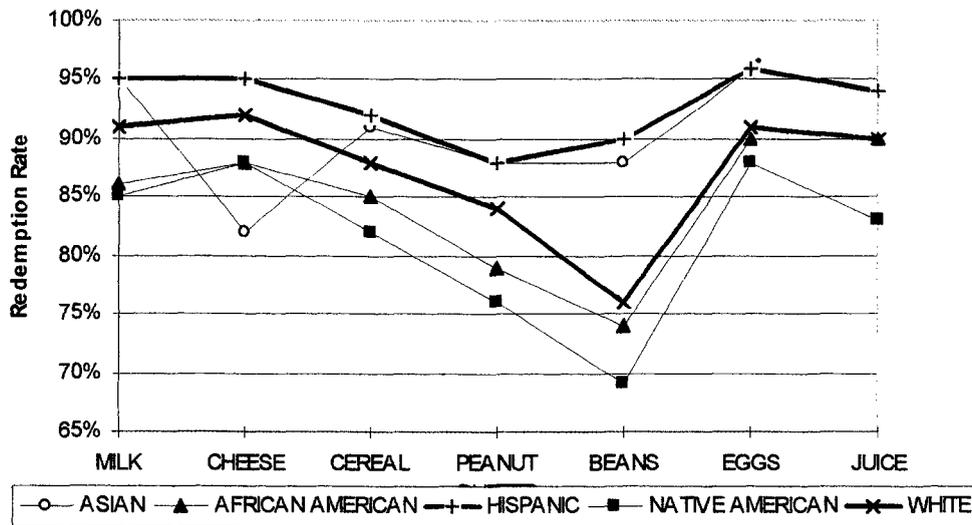


Figure 3a. California WIC Food Instrument Redemption Rates by Ethnicity, February 1999.

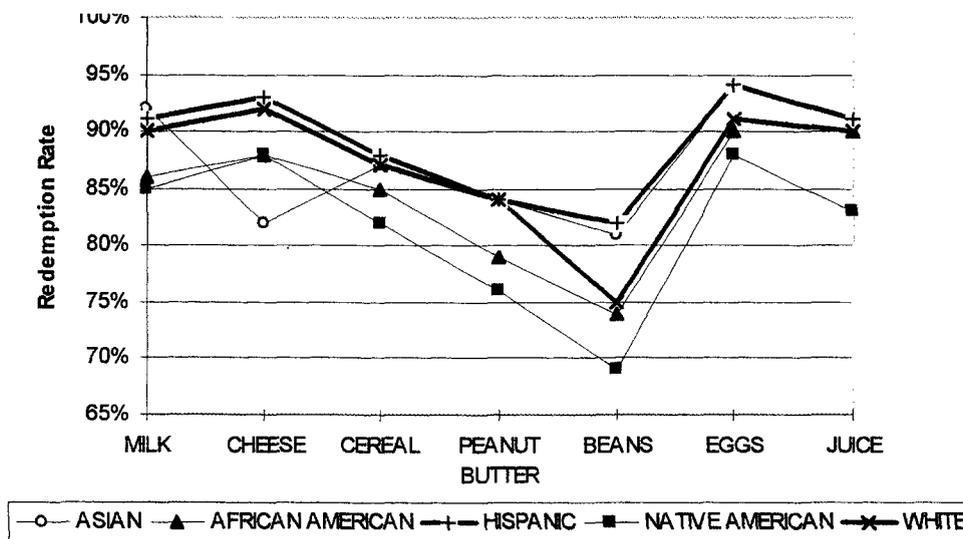


Figure 3b. California WIC Food Instrument Redemption Rates by Ethnicity, Primarily English Speakers Only, February 1999.

- (1) Primarily English-speakers may spend more time outside of their cultural neighborhoods, for employment or other reasons, than do their limited English-speaking counterparts. This greater mobility could cause primarily English-speakers to be away from their designated WIC authorized stores, finding it convenient to buy more of their food at other locations, even if they have to pay for it. (In California, WIC participants must now select one WIC authorized store location and conduct all of their WIC transactions there—plans have been made to change this practice in the near future, allowing WIC participants to use any authorized WIC vendor at any time.)
- (2) WIC food items are basic in nature and can require significant preparation time—especially beans. Primarily English-speaking women may be involved in more activities outside of their homes than are limited English-speaking women, and they may not have time for all of the preparation required by WIC foods.
- (3) Primarily English-speaking persons may be more aware of alternative food assistance programs (besides WIC) that might be available to them; limited, recent English-speaking immigrants may be less aware of such alternatives. Also, persons who have recently arrived from

countries that have little or no public assistance programs may be more likely to take full advantage of such U.S. programs of which they may be aware.

- (4) WIC is central to the shopping and even social activities of certain ethnic communities to which limited English-speakers could have relatively strong ties.
- (5) WIC foods are selected primarily for their nutritional value. As people from foreign backgrounds become assimilated into American language and culture, they might tend to pick up less nutrition-conscious American eating habits, preferring non-WIC foods at times when they have the money to pay for them.
- (6) Primarily English-speakers may have a little more income than do limited English-speakers. Correlations between income and redemption likelihood could be examined; higher incomes might be associated with lower redemption rates, at least within a given ethnicity. However, it should be noted from Figure 1 that African Americans and Native Americans have lower redemption rates than whites, yet their incomes would not be expected to be higher than whites. But African Americans and Native Americans are generally primarily English-speakers, a situation that supports the notion of relationship between language preference and redemption likelihood.

The foregoing considerations would apply to primarily English-speaking vis-à-vis limited English-speaking WIC participants regardless of their ethnicity and appear to reflect a general variation in the propensity to use WIC rather than any cultural aversion to particular food types. The low Asian

redemption rate for cheese vis-à-vis other ethnicities do appear to be the result of cultural aversion, given the relatively high Asian redemption rates for other food types.

Conclusions

With the exception of cheese for Asians, there is little evidence that any food type is more or less culturally acceptable to any peculiar ethnic or language group. Even the Asians are not necessarily adverse to dairy products, in general, given their relatively high redemption rate for milk.

Additionally, universally lower redemption rates of primarily English-speakers vis-à-vis limited English-speakers indicates that use of the English language can be a market segment delimiter for low-income consumers. Reasons for this redemption rate dichotomy between primarily English-speakers and limited English-speakers could be topics for further research.

Finally, the foregoing observations indicate that low-income consumers can and do make some food intake choices. Therefore, to encourage food consumption patterns consistent with general public health goals, even a food assistance program, such as WIC, needs to employ marketing techniques.

References

- Food Research and Action Center. 1991. *WIC: A Success Story*, Third Edition, p. vii. Washington, DC.
- Owen, Anita L. and George M. Owen. 1997. "Twenty Years of WIC: A Review of Some Effects of the Program." *Journal of the American Dietetic Association*. 97(7, July): 778-780.
- SAS Institute, Inc. 1989. *SAS/STAT® User's Guide, Version 6, Fourth Edition, Volume 1*, pp. 405-517. Cary, NC.
- USGAO (U.S. General Accounting Office). 1992. *Early Intervention: Federal Investments Like WIC Can Produce Savings*, pp. 27-31. Report to Congressional Requesters, Washington, DC. April.