



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Incentives for Non-Price Competition in the California WIC Program**

**Patrick W. McLaughlin**  
**Dept. of Ag. & Resource Economics**  
**University of California, Davis**  
**patrickm@primal.ucdavis.edu**

***Selected Poster prepared for presentation at the Agricultural & Applied Economics Association's  
2014 AAEA Annual Meeting, Minneapolis, MN, July 27-29, 2014.***

*Copyright 2014 by Patrick W. McLaughlin. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.*

# Incentives for Non-Price Competition in the California WIC Program

Patrick W. McLaughlin

Department of Agricultural and Resource Economics, University of California, Davis

## Research Question

Do firms carry more and better brands when they do not compete in price?

- Food vendors who primarily serve WIC participants is an example of a firm that does not compete in price.
- I find that these vendors carry more and better brands of some product categories but not others.

## Background

The California Special Supplemental Nutrition Program for Women, Infants and Children's (WIC Program) is a federally funded food assistance and health intervention program for low-income families with newborns and young children.

Participants receive redeemable vouchers called food instruments (FIs) for a fixed quantity allotment of approved food items (see Figure 1). Participants can choose among a set of brands and redeem FIs at no cost at state-approved vendors. Hence, participants have a **perfectly price-inelastic demand** for WIC goods.

One class of WIC vendor called an A50 vendor caters nearly exclusively to WIC participants. Because virtually all A50 vendor patrons have a perfectly price-inelastic demand, A50 vendors **cannot compete in price** to attract customers. Therefore, can **only compete in non-price dimensions**, e.g., the quality and quantity of WIC brands that they carry.

Compare incentives to compete for redemptions of two FIs similar in product content and profit margin save for the highly differentiated product category that consumers can purchase a variety of: breakfast cereal (FI 6003) and 100% fruit juice (FI 6011).

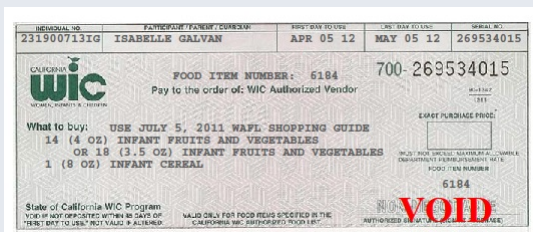


Figure 1 (left). A sample FI that would be issued to a participant. Notice the lack of price restrictions.

Figure 2 (right). The California WIC logo is typically displayed prominently on the storefront of authorized vendors and next to products eligible for WIC purchase.



Source: <http://www.wicworks.ca.gov/>

## Data

- A50 vendor in-store product survey (Spring 2012)
- Geographic location of all WIC vendors
- All FIs redeemed including product categories redeemed, vendor location, participant identification number (March-May 2012)
- Wholesale costs for select goods



Figure 2. Geographic Location of all California WIC Vendors

Table 2 Leading Breakfast Cereal and 100% Fruit Juice Brands, Stocked by Percentage of Vendors and Selected Wholesale Prices

Brand	N	Vendors Carrying Brand (%)	Wholesale Cost per Ounce		Average FI Partial Net Revenue*
<b>Breakfast Cereal Brands</b>					
Mean Number (Std. Dev.) = 12.4 (2.6)					
General Mills	284	100.00%	\$0.27	\$0.04	\$7.14
Kellogg's	284	98.90%	\$0.26	\$0.05	\$7.61
Post	284	99.60%	\$0.23	\$0.04	\$8.67
Quaker	284	91.90%	\$0.28	\$0.07	\$6.84
Mill Select	284	9.50%	\$0.14	\$0.01	\$11.88
<b>100% Fruit Juice Brands</b>					
Mean Number (Std. Dev.) = 8.0 (1.9)					
Golden Crown	284	19.40%			
Hansen's	284	78.20%	\$0.05	\$0.01	\$8.72
Langer's	284	55.60%	\$0.04	\$0.01	\$9.45
Old Orchard	284	45.40%			
Springfield	284	17.60%			
Welch's	284	24.60%	\$0.06	\$0.00	\$6.87

\*Computed as MADR for the respective FI (6003 for breakfast cereal, 6012 for juice) minus the average wholesale cost per ounce times the quantity allotted per respective FI. Both FIs allow for the same quantities of whole wheat bread and low-fat milk.

## Methodology

Empirical model:  $y_i^j = \beta_0^j + \beta_1^j brands_i + \beta_2^j ISC_i + \beta_3^j X_i + \epsilon_i^j$

$y_i^j$

- Attrition (j=1): percentage of participants who redeem an FI at vendor i in one period but elsewhere the next; defined for all A50 vendors in sample
- Log(Share of FI f) (j=2); logarithm of market share of either FI 6003 or 6011 relative to all WIC vendors; market based on Mean Statistical Areas including the Los Angeles, Inland Empire, San Francisco Bay, Sacramento, San Diego, Bakersfield and Fresno Areas.

$brands_i$

- Number of brands, dummies for specific product brands of ready-to-eat breakfast cereal and 100% fruit juice

$X_i$

- Controls; dummies for "WIC-Only" or chain status; number of registers (proxy for size); log-miles from nearest WIC Clinic

## Results

Results for  $ISC_i$

- Higher intensity of spatial competition with A50 vendors relates to higher attrition rates
- Market share unaffected

Results for  $brands_i$

- Carrying more cereal brands relates to lower attrition, higher market shares.
- Carrying the higher cost cereal brand (Quaker) relates to an increase in market share, but not the lower cost one (Mill Select).
- Juice brands irrelevant.

Additional notes

- Robust to definition of market share and  $ISC_i$ ; transformations of  $brands_i$ .
- Control variables collinear, insignificant in attrition model

Table 2. Estimated Models of Vendor Attrition and A50 Vendor Market Share

	Attrition (%)		log(FI 6003 redemption share)		log(FI 6011 redemption share)	
log(# Cereal Brands)	-0.165 (2.12)**	-0.16 (2.02)**	1.475 (2.93)***	1.462 (2.89)***	1.553 (2.96)***	1.538 (2.92)***
log(# Juice Brands)	-0.03 (0.57)	-0.037 (0.71)	-0.087 (0.25)	-0.014 (0.04)	-0.100 (0.27)	-0.029 (0.08)
Quaker (dummy)	0.042 (0.74)	0.02 (0.36)	1.042 (2.30)**	1.027 (2.28)**	1.014 (2.21)**	0.999 (2.18)**
Mill Select (dummy)	-0.006 (0.10)	-0.013 (0.23)	0.196 (0.60)	0.177 (0.55)	0.184 (0.55)	0.165 (0.50)
Hansen's (dummy)	0.034 (1.22)	0.036 (1.43)	-0.31 (1.79)*	-0.327 (1.93)*	-0.323 (1.88)*	-0.341 (2.02)**
Welch's (dummy)	0.035 (1.13)	0.035 (1.18)	-0.04 (0.22)	-0.068 (0.37)	-0.089 (0.47)	-0.117 (0.61)
Nearest A50 (miles)	-0.014 (4.85)***		-0.009 (0.27)		-0.013 (0.38)	
Nearest Large (miles)	0.010 (1.48)		-0.217 (1.31)		-0.209 (1.26)	
# A50 in 3-mile Radius		0.014 (3.87)***		-0.025 (1.31)		-0.023 (1.19)
# Large in 3-mile Radius		-0.001 (0.32)		0.008 (0.62)		0.008 (0.64)
WIC Only (dummy)			0.670 (2.68)***	0.645 (2.53)**	0.732 (2.86)***	0.706 (2.71)***
Chain (dummy)			0.652 (3.66)***	0.625 (3.51)***	0.63 (3.47)***	0.604 (3.32)***
Registers			0.199 (3.08)***	0.208 (3.26)***	0.201 (2.91)***	0.209 (3.06)***
log(NearClinic) (log-miles)	-0.004 (1.16)	-0.006 (1.80)*	-0.07 (3.01)***	-0.058 (2.48)**	-0.066 (2.83)***	-0.054 (2.30)**
Constant	0.796 (4.65)***	0.755 (4.39)***	-10.591 (10.30)***	-10.729 (10.95)***	-10.789 (9.94)***	-10.93 (10.56)***
$R^2$	0.15	0.15	0.76	0.76	0.76	0.76
N	284	284	199	199	199	199

## Conclusion

Quantity and quality of brands of some but not all product categories matter.

- Consumers respond to breakfast cereal brands but not 100% fruit juice ones.
- Reflects brand profile; A50 vendors invest in carry many and expensive breakfast cereal brands.

Nature of spatial competition unclear

- More competitors relates to more vendor attrition
- Intensity of spatial competition seemingly unrelated to market share; endogenous location to minimize non-price competition?