



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

*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.*

***Invited presentation at the 2018 Southern Agricultural
Economics Association Annual Meeting, February 2-6, 2018,
Jacksonville, Florida***

Copyright 2018 by Author(s). 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.



The Retailer Choice of SNAP Participants for Fill-In Purchases

Grace Melo¹, Adam Rabinowitz², Yizao Liu³, Shelly Ver Ploeg⁴

¹Pontificia Universidad Católica de Chile, ²University of Georgia ³Pennsylvania State University, ⁴ERS USDA

The views expressed are those of the authors and not the Economic Research Service or U.S. Department of Agriculture

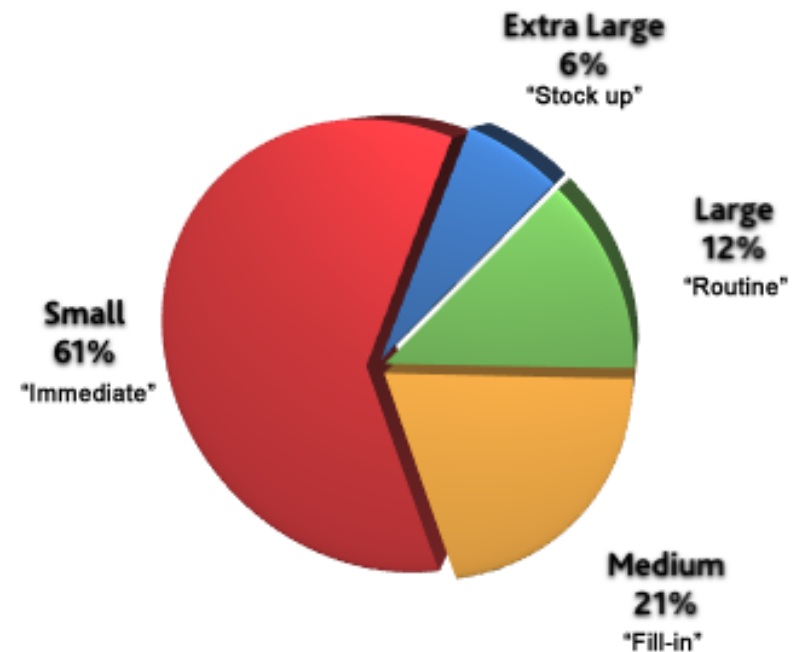
Low Income Household's Store Choices

- ▶ Policymakers are pursuing initiatives to increase food access for low-income households.
- ▶ However, improved food store access will not necessarily change dietary habits and leads to a healthier diet, especially for the low income households.
- ▶ It is important to understand the determinants of store choice among low-income households before implementing policies that incentivize retailers to do business in food deserts

Fill-in Trips

- ▶ Between regular main shopping visits, households may need to refill their pantry/refrigerator with staple items
 - ▶ smaller purchased food basket
 - ▶ shorter expected time for the shopping trip
 - ▶ different choice of retailer: smaller retailers

The Majority of U.S. Shopping Trips are "small" or "immediate" need driven

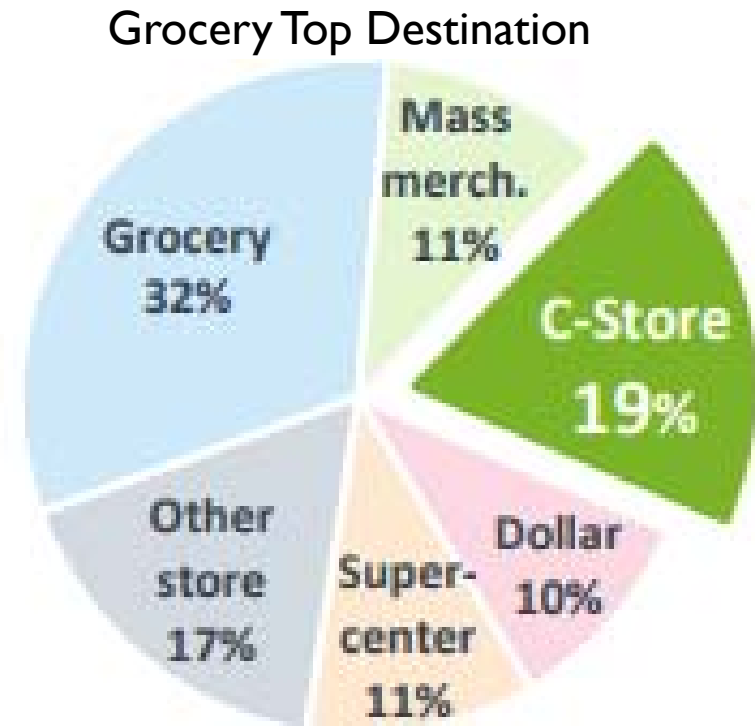


Source: The Nielsen Company

Source: Nielsen Study, 2011

Small Retailers: C-Stores

- ▶ Purchases at smaller stores may have a negative impact on SNAP participants' ability to purchase healthier items and may limit their food expenditures due to higher food prices at these stores.



Source: General Mills Fill-In Trip Study, 2014

SNAP-Authorized Retailers

- ▶ In 2016, USDA published a federal rule aimed to increase the number of healthy items in stock
 - ▶ “Enhancing Retailer Standards in the Supplemental Nutrition Assistance Program (SNAP)” at [81 FR 90675](#).
- ▶ This expanded retailer stocking requirements would likely remove many convenience stores from participation in SNAP.

Previous Work

- ▶ Research examining the store choice of SNAP recipients is scarce
- ▶ Taylor and Villas-Boas (2016) studied the role of distance traveled on store choice
 - ▶ households are willing to pay more to travel to a larger grocery store than a convenience store.

Study

Objective:

Assess the factors that influence households store choice during fill-in trips when purchases of bread, eggs, or milk occurred.

We focus on store choices between:

- ▶ SNAP and non-SNAP participants
- ▶ Fill-in Trips and Main Shopping

Defining fill-in trips in the FoodAPS data








General definition:

- ▶ Fill-in trip is any trip which expenditures are below a threshold (Kahn and Schmittlein, 1989)
- ▶ We use the median of expenditures per household member as a threshold (Anić and Radas, 2006)
- ▶ Threshold was determined using IRI Academic dataset (trips data)

Fill-in trips to buy staples:

- ▶ Fill-in Trips in which milk, bread, or eggs are purchased

Top Items most often purchased during Fill-in Trips

	Milk	57%
	Bread	50%
	Soda	42%
	Eggs	39%
	Salty Snacks	28%
	Ice cream	27%
	Cheese	25%

Source: General Mills Fill-In Trip Study, 2014

Data

USDA's National Household Food Acquisition and Purchase Survey (FoodAPS),

- ▶ 4,317 Households who reported 13,819 food at home purchases from stores.

- ▶ We classify shopping trips:
 - ▶ Main Shopping Trip
 - ▶ Fill-in Trips when bread, milk, or eggs are purchased
 - ▶ Fill-in Trips (bread, milk, eggs are not purchased)

- ▶ Six Store Choices:
 - ▶ supermarkets, superstores, convenience stores, grocery stores,

Empirical Framework

Multinomial Logit (Greene, 2003)

$$p_{ij} = \Pr(y_j = i) = \begin{cases} \frac{1}{1 + \sum_{m=2}^k \exp(x_j \beta_m)}, & \text{if } i = 1 \\ \frac{\exp(x_j \beta_m)}{1 + \sum_{m=2}^k \exp(x_j \beta_m)}, & \text{if } i > 1 \end{cases}$$

where:

p_{ij} : Probability that the response for the j th observation is equal to the i th categorical outcome. There are k categorical outcomes.

β_m : coefficient vector for outcome m

X : vector of independent variables

Data

Table 1 Shopping Trips

Variable	Main	Fill-in Staples	Fill-in No Staples
Milk, bread, or eggs were purchased	0.49	1	0
Total Expenditures (\$)	94	26	15
Per capita expenditures (\$)	42	8	5
Driving Distance (miles)	7.26	4.83	6
Number of USDA Food Categories (out of 33)	11	6	3
Use of Coupon	8%	4%	2%
N	2692	4634	6160

▶ 11 Note: * Variables in the regression

Data

- Compared to main shopping trips, low income households pay higher prices for a typical basket of food products for both fill-in trips with and without staples.

Data

Table 2 Summary Statistics of Store Visits

Variables	Convenience	Grocery	Supermarket	Superstore
SNAP HH	0.50	0.40	0.33	0.33
WIC HH	0.14	0.18	0.11	0.14
Fill-in Trip Staples	0.25	0.35	0.39	0.35
distance (miles)	4.61	3.72	5.10	6.27
Number of USDA food categories	2.22	3.43	5.98	6
Coupon Use	0.01	0.01	0.05	0.04
N	552	503	4673	5552

Preliminary Results

Table 3 Average Marginal Effects Main Shopping Trips

Coupon Use	Convenience	Grocery	Supermarket	Super
<i>Main Shopping Trips</i>				
High Income Household	0.003	-0.004*	0.085	-0.075
Non-SNAP low-income Household	-0.000	-0.009*	0.113	-0.093
SNAP Household	-0.001	-0.015**	0.156*	-0.160*
<i>Fill-in Trip No Staples</i>				
High Income Household	0.004	-0.000	0.054	-0.035
Non-SNAP low-income Household	0.052	-0.052***	0.168	-0.072
SNAP Household	-0.049*	-0.038*	0.266*	-0.124
<i>Fill-in Trip Staples</i>				
High Income Household	0.007	-0.021	0.075	-0.133
Non-SNAP low-income Household	-0.015***	-0.023***	0.161	-0.042
SNAP Household	-0.011	-0.008	0.237	-0.207

Results

Table 3 Average Marginal Effects All Shopping Trips

Variables	Convenience	Grocery	Supermarket	Super
log(Driving distance, miles)				
<i>Main Shopping Trips</i>				
Non-SNAP low-income Household	-0.000	-0.001	0.065*	0.008
High Income Household	-0.001	0.001	0.050	0.009
SNAP Household	-0.001	0.001	0.100	-0.047
<i>Fill-in Trips No Staples</i>				
Non-SNAP low-income Household	-0.027	0.010	0.160	0.022
High Income Household	-0.018	0.010	0.175	0.032
SNAP Household	-0.042	-0.001	0.157	0.070
<i>Fill-in Trips Staples</i>				
Non-SNAP low-income Household	-0.011	-0.003	0.107	-0.045
High Income Household	-0.003	0.011	0.098	-0.047
SNAP Household	-0.009	-0.003	0.131	-0.032

Results

Table 3 Average Marginal Effects Main Shopping Trips

Log(Price Paid)	Convenience	Grocery	Supermarket	Super
<i>Main Shopping Trips</i>				
Non-SNAP low-income Household	-0.001	-0.000	-0.105	0.142
High Income Household	-0.002	-0.000	-0.122	0.155**
SNAP Household	-0.001	0.002	-0.079	0.112
<i>Fill-in Trips No Staples</i>				
Non-SNAP low-income Household	-0.029	-0.026	0.234	0.306
High Income Household	-0.004	0.001	0.214	0.089
SNAP Household	-0.051	0.021	0.294	0.201
<i>Fill-in Trips Staples</i>				
Non-SNAP low-income Household	-0.002	-0.024	0.080	-0.010
High Income Household	-0.009	-0.000	0.088	0.067
SNAP Household	0.006	0.014	0.003	0.088

Preliminary Results

- ▶ **For fill-in trips in which milk, bread, or eggs were purchased**, price (coupon use) was the major feature influencing the choice of the majority of options of where to shop for non-SNAP low-income households.
- ▶ **During fill-in trips in which milk, bread, or eggs were not purchased (Small Trips)**, coupon use was the only factor associated with the choice of the majority of store options for SNAP and non-SNAP low-income households.

Results

Table 3 Average Effects Main Shopping Trips

Number of food categories, USDA	Convenience	Grocery	Supermarket	Super
<i>Main Shopping Trips</i>				
non-SNAP Low Income Household	-0.000	-0.001	0.015	-0.014
High Income Household	0.000	-0.000	0.017*	-0.015
SNAP Household	-0.000	-0.000	0.010	-0.009
<i>Fill-in Trips No Staples</i>				
non-SNAP Low Income Household	-0.004	-0.004	0.012	-0.011
High Income Household	-0.002	-0.001	0.007	-0.003
SNAP Household	0.001	-0.006	0.009	-0.006
<i>Fill-in Trips</i>				
non-SNAP Low Income Household	0.000	-0.000	0.009	-0.007
High Income Household	-0.001	-0.003	0.009	-0.006
SNAP Household	-0.001	-0.007	0.010	-0.001
Observations	13486	13486	13486	13486

Conclusion

- ▶ **During fill-in trips in which milk, bread, or eggs were purchased**, price (coupon use) was the major feature influencing the choice of the majority of options of where to shop for non-SNAP low-income households. Price paid only influenced SNAP households' likelihood of choosing a Combination store.
- ▶ **During fill-in trips in which milk, bread, or eggs were not purchased (Small Trips)**, coupon use was the only factor associated with the choice of the majority of store options for SNAP and non-SNAP low-income households.
- ▶ **During main shopping trips**, travel distance, number of food categories, and coupon use were important influencing high-income and non-SNAP households' likelihood to choose a store. Only price paid was associated with the likelihood to choose a Supermarket for high-income consumers.

References

- ▶ General Mills (2014) "Capturing the Fill-In Trip at C-Store" <https://www.generalmills.com/industries/convenience/support-tool-categories/consumer-insights/capturing-the-fill-in-shopping-trip> (accessed May 26, 2017) " In.
- ▶ Greene, W.H. 2003. "Econometric Analysis (5th)." Ed.. Upper Saddle River, NJ.
- ▶ Taylor, S.H., Todd (2011) "The Just in Time Consumer: How Shopping Trips Align with Economic Woes." <http://www.nielsen.com/us/en/insights/news/2011/the-just-in-time-consumer-how-shopping-trips-align-with-economic-woes.html> (accessed August 14, 2017)." In Nielsen ed.
- ▶ Taylor, R., and S.B. Villas-Boas. 2016. "Food Store Choices of Poor Households: A Discrete Choice Analysis of the National Household Food Acquisition and Purchase Survey (FoodAPS)." *American Journal of Agricultural Economics* 98:513-532.
- ▶ Ver Ploeg, M., et al. 2015. "Where do Americans usually shop for food and how do they travel to get there? Initial findings from the national household food acquisition and purchase survey." *US Department of Agriculture, Economic Research Service, Washington, DC.*