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Household Grocery Shopping Destination Allocations: Have Local Stores Caught on with the Rise of Local Foods?

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Motivation

- ❖ Local foods are gaining increasing popularity
- ❖ Limited studies have been done about household grocery purchase allocations in the awakening of local food, especially for individuals who stick to the "locavore" principle

Objectives

- ❖ Examine where households shop for their groceries and how they allocate their shopping trips among national stores versus local and specialty food stores
- ❖ Identify what factors may determine household choice of stores for grocery shopping
- ❖ Investigate how perceptions on 'local food' may affect household grocery store choice

Survey

- ❖ An online survey conducted in Fall 2008 of population in Ohio

- ❖ 512 completed questionnaire through Zoomerang.com

- ❖ Demographic features:
49.2% Female (state average: 51.3%);
90.6% White (state average: 85.4%);
Mean age over 18 is 47.2 years old (state average: 48.5)



- ❖ Key Survey Question

	Number of Visits in the Past Two Months					
	Never	One time	2-4 times	5-10 times	11-15 times	>15 times
National Grocery Chain (e.g., Kroger, Giant Eagle, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National "Big Box" retailer (e.g., Wal-Mart, Meijer, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Locally Owned Grocery	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Convenience Store	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specialty Food Store (e.g., organic, ethnic food, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Farm or Farmers' Market	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

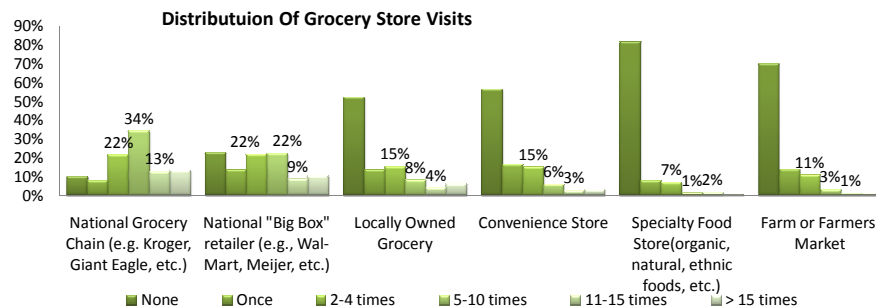
Model

Seemingly Unrelated Regression (SUR) model setup:

$$Y_i = X_i'\beta + U_i$$

Y_i : frequency (percentage share) of visits to each type of grocery stores
 X_i : explainable variables, including household head demographic characteristics, acceptable distance for local foods, and family composition variable.

Descriptive Summary



Econometric Results and Discussions

Regression Results by SUR Model					
	National Chain	National Retailer	Local Grocery	Specialty Store	Farmers' Market
SHOPPER	0.0109	-0.0186	0.0675***	0.0053	-0.0195
URBAN	0.1182***	-0.0646***	-0.0714***	0.0062	-0.0072
EMPLOY	0.0442**	-0.0433**	-0.0409**	0.0042	0.0114
EDU	0.8268***	-0.7708***	-0.0909	0.2696***	0.2282
MARITAL	-0.0081	0.0208	0.0013	-0.0076	-0.0031
WHITE	-0.0397	0.0667***	-0.0137	0.0117	0.0317**
FEMALE	0.0386*	-0.0019	-0.0310*	0.0066	0.0089
HHINCOME	0.0042*	-0.0039*	0.0006	0.0015**	-0.0006
Family Composition					
UNDERS5	-0.0003	0.0152	-0.0171	0.002	0.0007
5to9	0.0135	0.0018	-0.0089	0.0022	0.0056
10to14	-0.0461*	0.0453*	0.0034	-0.0093	0.0033
15to19	0.008	-0.0114	-0.0045	-0.0008	-0.0058
20to24	-0.0156	0.0016	0.0079	0.0014	0.0009
25to34	-0.0397*	0.0243	0.0014	0.0063	-0.0055
35to44	0.0122	-0.0384*	0.0155	0.0093	-0.0064
45to54	-0.0427**	-0.0089	0.0221	0.0017	0.0175**
55to59	0.0427	-0.0286	-0.005	-0.0048	0.0125
60to64	-0.0722**	0.0076	0.0284	0.0234**	0.0300*
65to69	0.0352	-0.0763**	0.0189	0.0047	0.02
70to79	0.0011	-0.0503**	0.0546***	0.0047	-0.0004
MAXDISTAN	0.0057	0.0032	-0.0048	-0.003	-0.0036
INTERCEPT	0.1863**	0.4448***	0.1649***	-0.0441*	0.0021
RMSE	0.2279	0.2096	0.1830	0.0736	0.1035
R ²	0.1533	0.1158	0.0921	0.0484	0.0527

Breusch-Pagan test of independence: $\chi^2(10) = 304.0, p = 0.0000$ (Note: "Convenient Store" is the omitted type in the model)

*, **, *** indicate significant level respectively at 10%, 5%, 1%.

- ❖ **Model fitness:** errors are highly correlated in all equations
- ❖ **Mainstream grocery stores:**
 - ❑ A household visits 11.82% more (frequency, in percentage) to National Chain Stores and 6.46% less to "Big Box" Retailers if live in the city or suburb than rural areas
 - ❑ Families with at least one household head fully employed; with higher education or with higher income have less trips to shopping at "Big Box" Retailers
- ❖ **Local Grocery Stores**
 - ❑ Respondents visit 6.7% more to these stores if they are main grocery shoppers in the household
 - ❑ Full employment status, female household heads, and families with older members shop less in these stores
- ❖ **Specialty Stores**
 - ❑ Household heads with one more year education go 0.27% more in specialty stores for grocery
 - ❑ Ten thousand dollars in household annual income may be associated with 0.15% increase in visits
- ❖ **Farmers' Market**
 - ❑ Families with older members and white visit more at farmers' markets
- ❖ Household's perception on 'how far local food can travel' is not significant in choice of grocery stores.



Conclusions

- ❖ This study is the first to examine how households allocate food grocery shopping trips with special attention on the impact from how far they believe local foods can travel.
- ❖ Using shares of each type of grocery stores visited in the past two months, a SUR regression exhibits correlation among different types of store choice.



- ❖ Most popular food grocery source are national chains (e.g., Kroger) and national big box stores (e.g., Wal-Mart); however, local grocery stores and farmers' markets have gained increasing attention.
- ❖ No clear difference in grocery store choices among households with different understanding of how long food can travel while still being considered local.
- ❖ Interesting results regarding visits to Big Box Retailers: households with higher income and more senior members in the family have less visits to this type of stores.

Selected Reference:

King, Robert P., Hand, Michael S., DiGiacomo, Gigi, Clancy Kate, Gomez, Miguel I., Hardesty, Shermain D., Lev, Larry and McLaughlin, Edward W. 2010. *Comparing the Structure, Size, and Performance of Local and Mainstream Food Supply Chains*. Washington DC: USDA, Economic Research Report Number 99, June.

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