Warehouse Clubs, Bulk Buying, and Inequality

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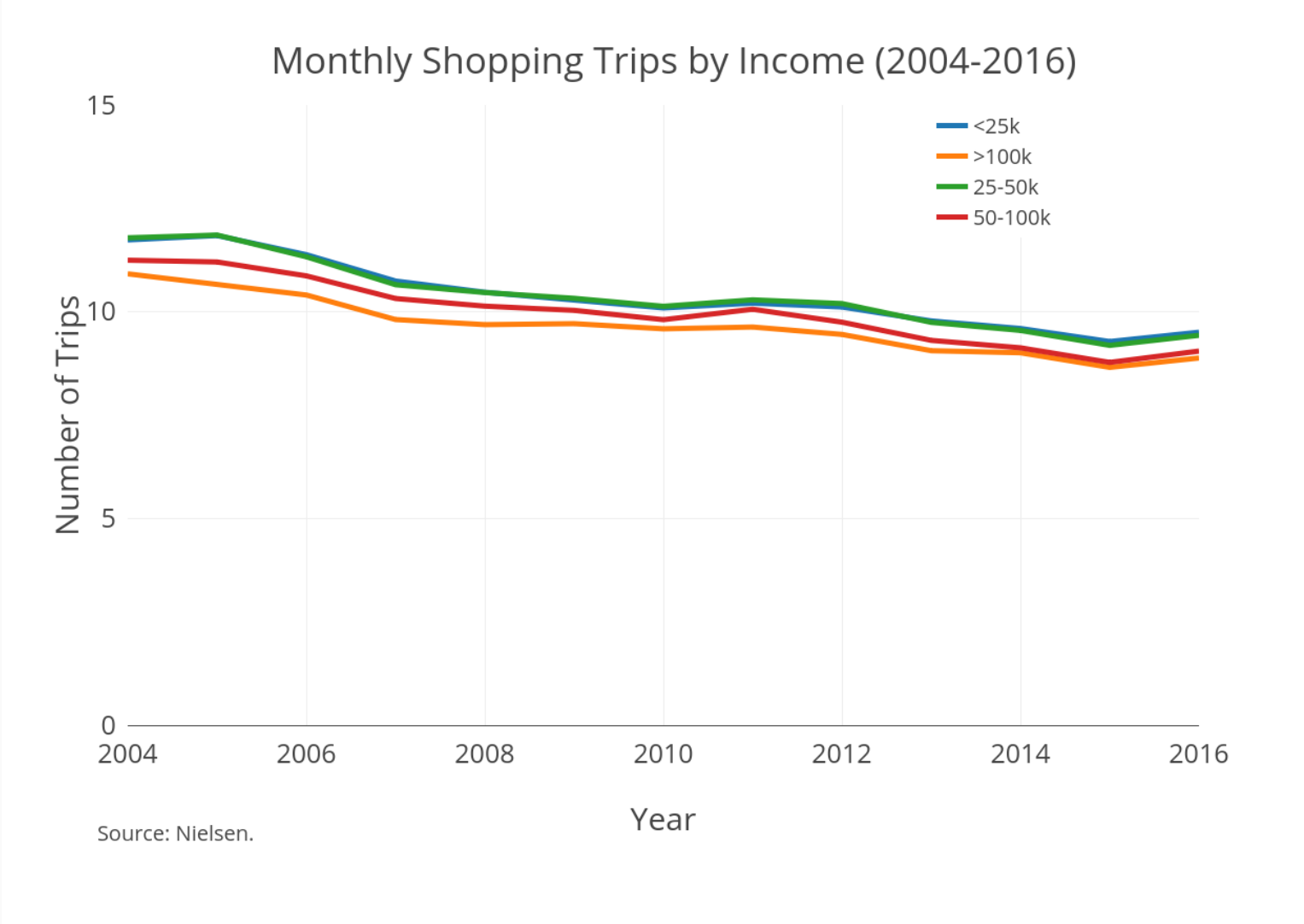
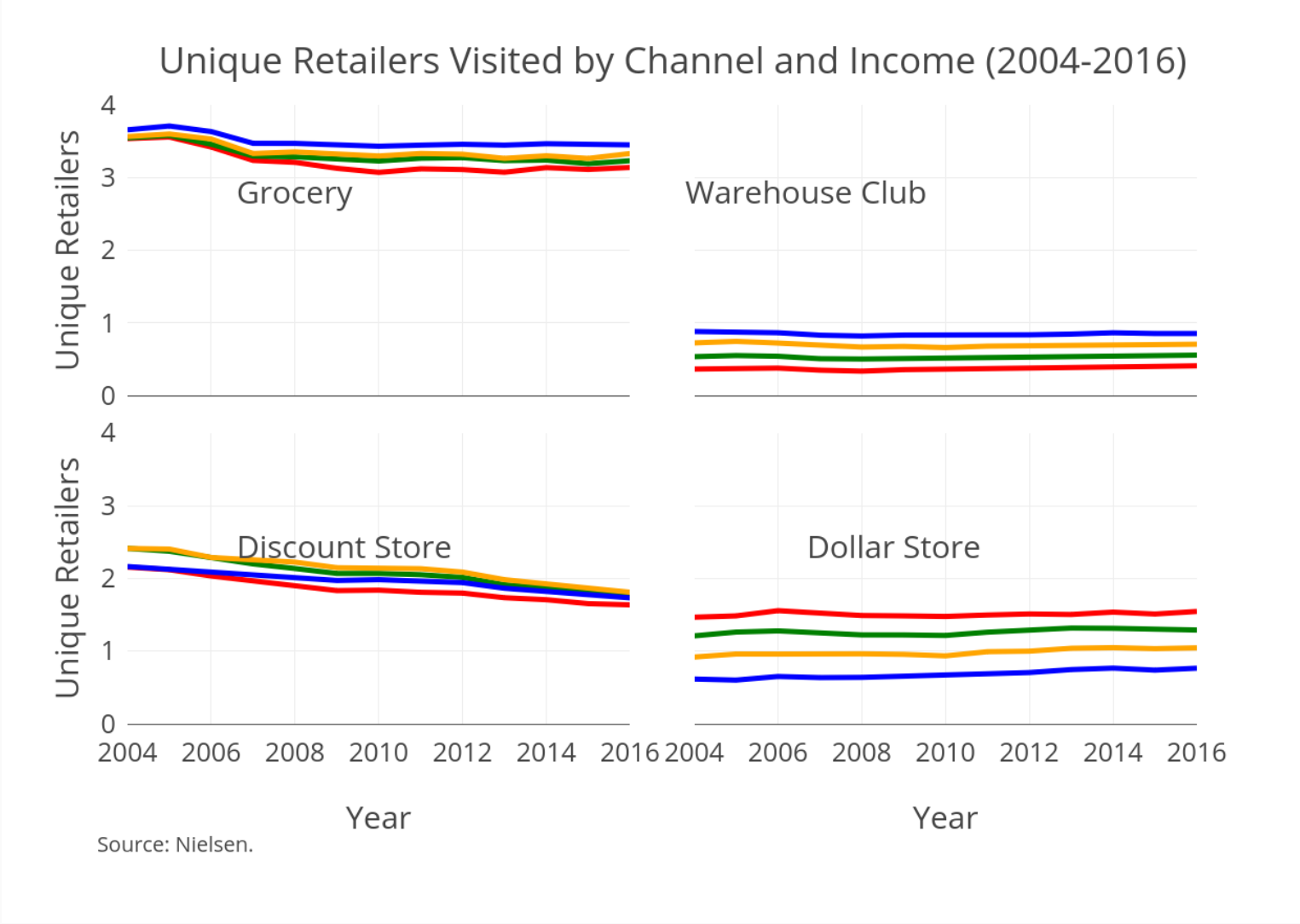
Motivation

- Households are shopping less



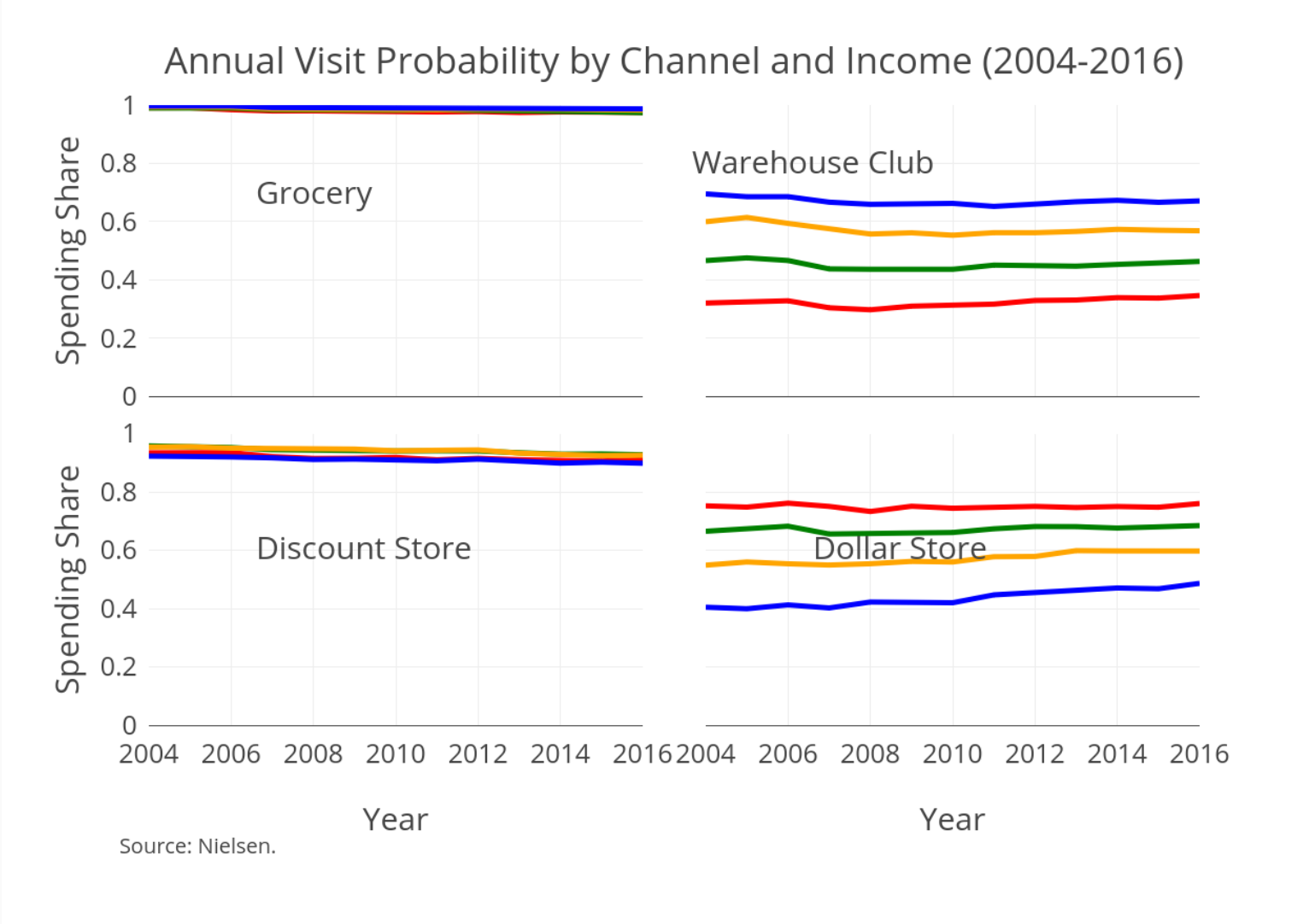
Motivation

- Households are shopping at fewer unique stores



Motivation

- Propensities differ across store types



Linear Probability Regression

Table 1:

	Visit			
	Grocery	Discount	Dollar	Warehouse
	(1)	(2)	(3)	(4)
25-50k	0.002**	0.006**	−0.094***	0.105***
	(0.001)	(0.002)	(0.004)	(0.004)
50-100k	0.005***	0.001	−0.193***	0.204***
	(0.001)	(0.003)	(0.005)	(0.006)
>100k	0.008***	−0.023***	−0.310***	0.275***
	(0.001)	(0.004)	(0.007)	(0.009)
Household Demographics	Y	Y	Y	Y
Year-Market FE	Y	Y	Y	Y
Observations	731,994	731,994	731,994	731,994
Adjusted R^2	0.012	0.055	0.115	0.115
Note:	*p<0.1; **p<0.05; ***p<0.01			

Channel Correlation

Table 2:

	Grocery	Discount	Dollar	Warehouse
Grocery	1	0.033	0.153	0.056
Discount	0.033	1	0.159	0.046
Dollar	0.153	0.159	1	-0.079
Warehouse	0.056	0.046	-0.079	1

Research Questions

1. Why do households shop at different stores?
    - How important are transportation costs? Is it something else?
2. What are the consequences of different shopping patterns?
    - Do households pay different unit prices?

Unit Price Heterogeneity (Water)

Table 3:

	Unit Costs (cents/unit)				
	(1)	(2)	(3)	(4)	(5)
25-50k	0.048	0.080**	−0.029	0.032	−0.024
	(0.038)	(0.038)	(0.024)	(0.033)	(0.019)
50-100k	0.118***	0.176***	−0.080***	0.107***	−0.043***
	(0.033)	(0.037)	(0.016)	(0.033)	(0.015)
>100k	0.341***	0.329***	−0.108***	0.217***	−0.056***
	(0.046)	(0.052)	(0.019)	(0.042)	(0.017)
Constant	2.441***				
	(0.045)				
Household Demographics	N	Y	Y	Y	Y
Brand FE	N	N	Y	N	Y
Store FE	N	N	N	Y	Y
Observations	5,476,844	5,476,844	5,476,844	5,476,844	5,476,844
Adjusted R^2	0.001	0.012	0.726	0.150	0.739
Note:	*p<0.1; **p<0.05; ***p<0.01				

Unit Price Heterogeneity (Tissue)

Table 4:

	Unit Costs (cents/unit)				
	(1)	(2)	(3)	(4)	(5)
25-50k	0.065***	0.065***	0.037**	0.051***	0.033**
	(0.016)	(0.015)	(0.015)	(0.015)	(0.015)
50-100k	0.140***	0.136***	0.089***	0.112***	0.079***
	(0.016)	(0.016)	(0.015)	(0.014)	(0.012)
>100k	0.252***	0.220***	0.158***	0.189***	0.141***
	(0.018)	(0.017)	(0.017)	(0.016)	(0.016)
Constant	1.242***				
	(0.018)				
Household Demographics	N	Y	Y	Y	Y
Brand FE	N	N	Y	N	Y
Store FE	N	N	N	Y	Y
Observations	3,242,257	3,242,257	3,242,257	3,242,257	3,242,257
Adjusted R^2	0.001	0.004	0.102	0.020	0.112

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Unit Price Heterogeneity (Diapers)

Table 5:

	Unit Costs (cents/unit)				
	(1)	(2)	(3)	(4)	(5)
25-50k	0.443	0.638	−0.545**	0.651*	−0.294
	(0.404)	(0.393)	(0.277)	(0.363)	(0.221)
50-100k	1.126***	1.389***	−0.673**	1.534***	−0.213
	(0.411)	(0.441)	(0.285)	(0.421)	(0.225)
>100k	2.802***	2.800***	−0.823***	3.031***	−0.212
	(0.531)	(0.603)	(0.278)	(0.578)	(0.241)
Constant	30.357***				
	(0.399)				
Household Demographics	N	Y	Y	Y	Y
Brand FE	N	N	Y	N	Y
Store FE	N	N	N	Y	Y
Observations	669,839	669,839	669,839	669,839	669,839
Adjusted R^2	0.003	0.032	0.562	0.079	0.591

Note: *p<0.1; **p<0.05; ***p<0.01

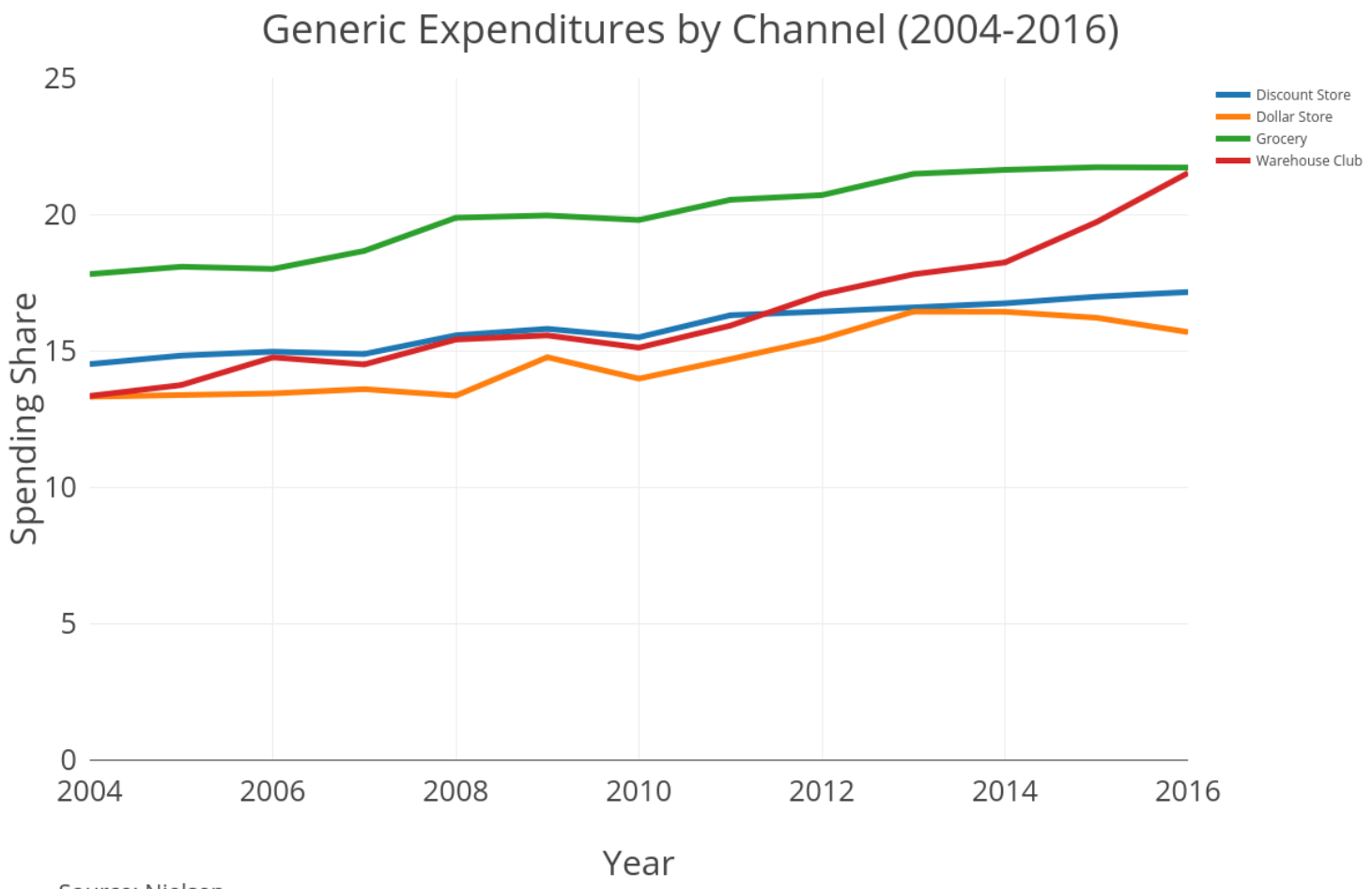
Unit Price Heterogeneity (Toilet Paper)

Table 6:

	Unit Costs (cents/unit)				
	(1)	(2)	(3)	(4)	(5)
25-50k	0.516	1.923***	0.837***	0.859***	0.344*
	(0.443)	(0.445)	(0.215)	(0.300)	(0.193)
50-100k	3.889***	6.065***	2.739***	3.266***	1.378***
	(0.315)	(0.337)	(0.390)	(0.297)	(0.289)
>100k	7.168***	8.734***	3.744***	4.071***	1.352***
	(0.478)	(0.526)	(0.459)	(0.472)	(0.344)
Constant	56.093***				
	(1.030)				
Household Demographics	N	Y	Y	Y	Y
Brand FE	N	N	Y	N	Y
Store FE	N	N	N	Y	Y
Observations	5,001,763	5,001,763	5,001,763	5,001,763	5,001,763
Adjusted R^2	0.002	0.008	0.097	0.037	0.110

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Generics


Generic Expenditures by Channel (2004-2016)
Spending Share
25
20
15
10
5
0
2004
2006
2008
2010
2012
2014
2016
Year
Discount Store
Dollar Store
Grocery
Warehouse Club
Source: Nielsen.

Next Steps

- Schedule proposal defense. What are expectations for defense?
- Send "Value of Variety" paper.
  - Only found Quan and Williams (2018) and Brynjolffson, Hu, and Smith (2003)
- Estimate linear probability model incorporating Costco openings
  - Provides a baseline for the importance of distance
- Get distributions of sizes purchased per trip and within stores