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How Consumer Awareness and Generic Promotions Drive Demand: the Case of Orange Juice

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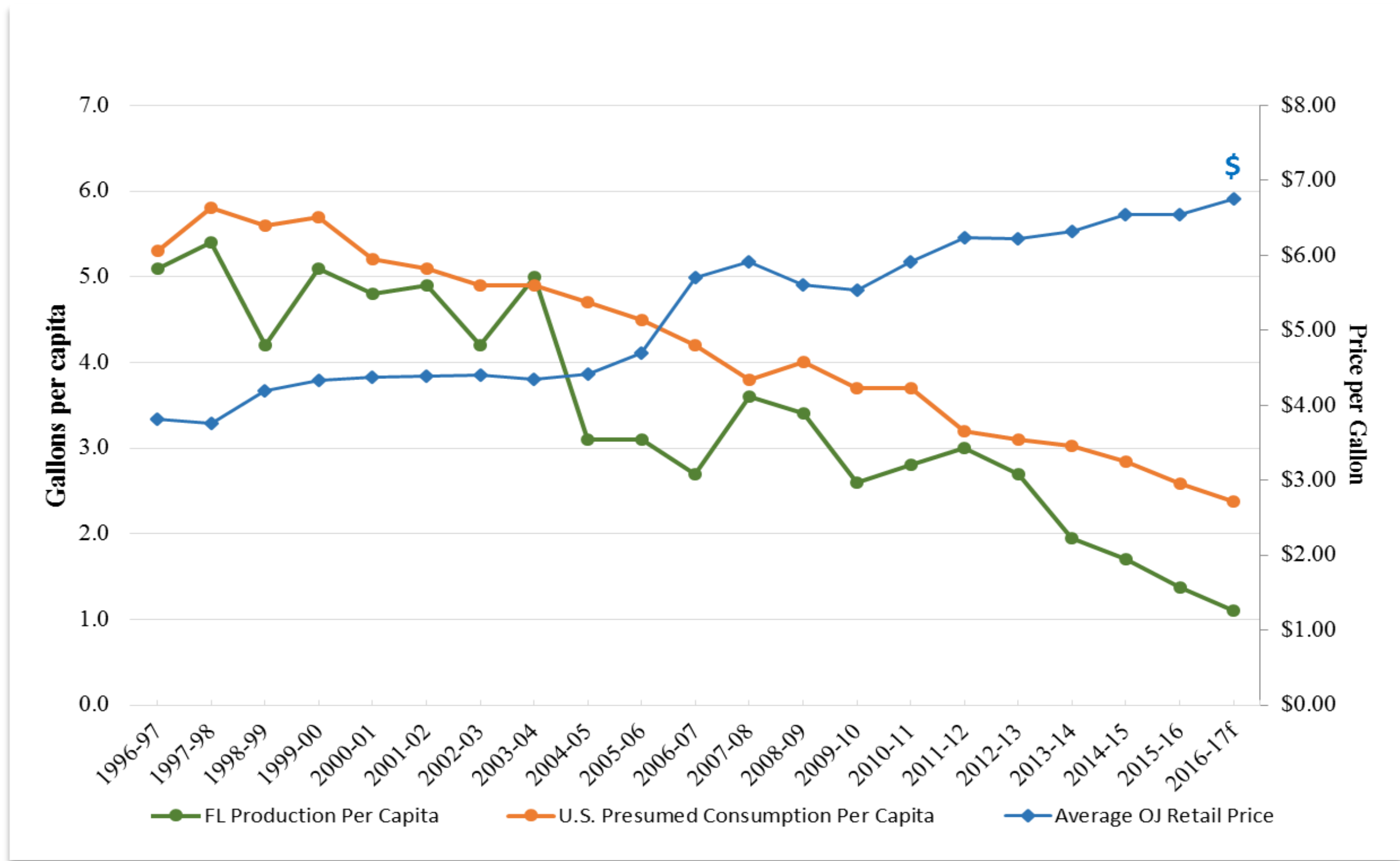
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INTRODUCTION

- The US orange juice industry has experienced dramatic changes in the past decade.
- The U.S. domestic orange juice industry has been shrinking due to both supply side (e.g., citrus greening disease) and demand side reasons.
- It is critical for the industry to understand and enhance consumers’ demand for orange juice, both to sustain the higher prices associated with increased production costs and decreased production, as well as to maintain demand for the point in time where production can increase.



METHODS

- Using the household tracker, the total demand can be represented as a product of the number of U.S. households (HH), market penetration (MP), and market intensity (MI): Demand = HH × MP × MI.
- The penetration model is defined as a probit model:
- $OJ30 = \begin{cases} 1 & \text{if yes to buying OJ} \\ 0 & \text{if no to buying OJ} \end{cases}, \Pr(Oj30 = 1|X) = F(X\beta)$
- $X=[\text{Age, Gender, Education, Race, Marry, Expenditure, Region, Breakfast, Income, Hhsize, Health concerns, Awareness of OJ promotions and advertising, Healthy behavior, Organic food preference, Complacency opinions, Good perceptions about OJ, Negative perception about OJ, OJ is perceived natural}]$
- The intensity model is defined as a OLS regression:
- $LOJVOL=\log(\text{Self-reported volume weighted by container size})=X_2\beta$
- $X2=[X, \text{top three most important OJ attributes, unit price}]$
- We can further create an index in demand changes relative to the average condition (D_0): $IndexD_k = \frac{D_k}{D_0} = \frac{MP_k \times MI_k}{MP_0 \times MI_0}$

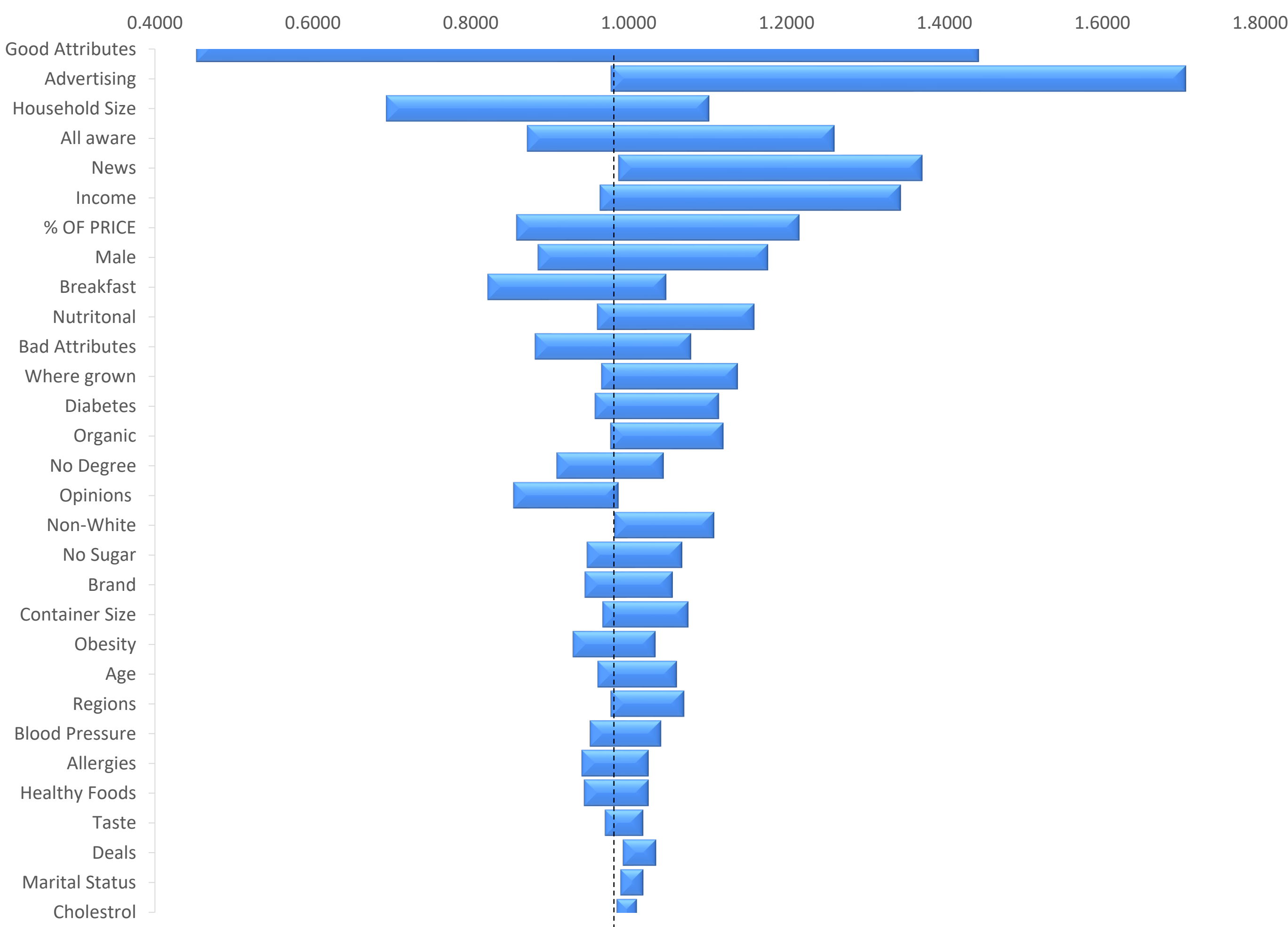
DATA

- A monthly consumer tracker is developed and was first launched in July 2016, aiming to collect a monthly sample of 500 respondents representing the US population. By June 2017, the database included over 6,000 household data points.
- The survey targets primary grocery shoppers who are at least 18 years of age.

RESULTS: COEFFICIENTS

Market Penetration			Market Intensity	
Variables	Coefficient	Std Error	Coefficient	Std Error
Constant	-1.468***	0.174	-2.167***	0.538
Age2	0.049	0.059	-0.016	0.048
Age3	0.149**	0.060	-0.154***	0.054
Age4	0.168***	0.059	-0.165***	0.056
Female	-0.144***	0.041	-0.224***	0.037
Degree	0.176***	0.043	0.062	0.042
White	-0.178***	0.060	-0.048	0.053
Marry	-0.033	0.046	-0.015	0.035
LogEXP	0.268***	0.030	0.266***	0.052
Region2	0.174***	0.057	0.006	0.052
Region3	0.004	0.056	-0.007	0.044
Region4	0.021	0.052	-0.022	0.041
BR15	0.206***	0.047	0.151***	0.055
Inc2	0.011	0.051	-0.018	0.038
Inc3	0.107*	0.058	-0.001	0.046
Inc4	0.030	0.057	0.057	0.042
HHSize	0.148***	0.052	-0.807***	0.048
BP	0.021	0.054	-0.100**	0.040
DB	-0.012	0.061	0.157***	0.044
CL	0.030	0.056	-0.039	0.040
AG	-0.076	0.056	-0.053	0.044
OB	-0.185***	0.058	-0.026	0.055
Aware	0.444***	0.041	0.183**	0.081
Organic1	-0.119**	0.050	-0.144***	0.039
Organic3	0.047	0.051	0.037	0.039
Opinion1	-0.159***	0.046	-0.076*	0.042
Opinion3	-0.019	0.050	0.199***	0.037
Healthy1	-0.091*	0.051	-0.028	0.042
Healthy3	-0.069	0.049	0.046	0.038
OJGood1	-0.710***	0.053	-0.273*	0.153
OJGood3	0.411***	0.047	0.263***	0.076
OJBad1	0.067	0.048	-0.054	0.034
OJBad3	-0.221***	0.051	-0.104*	0.056
OJNat1	-0.108**	0.052	-0.075*	0.045
OJNat3	-0.113**	0.050	-0.033	0.041
LOJP			-0.318***	0.044
OJGrow			0.165***	0.042
OJOrg			0.137**	0.055
OJBr			0.112***	0.041
OJSize			0.107***	0.040
OJNut			0.189***	0.048
OJTaste			0.049	0.042
OJDeal			0.042	0.048
OJNews			0.330***	0.111
OJAdv			0.557***	0.109
Aware_Pos			0.173***	0.046
IR2			0.447	0.295
R ²	0.240		0.367	
Log Likelihood	-3044.260		-1820.580	

RANKING OF THE RELATIVE IMPACTS OF DEMAND DRIVERS



CONCLUSIONS

- We identified several demand drivers for orange juice, including demographics, health conditions, awareness, and consumer perceptions.
- Our results show that elder, male, college graduated, non-white consumers are more likely to purchase orange juice than their counterparts.
- Also, as eating breakfast is an important factor influencing orange juice consumption, the industry can pursue campaigns that encourage breakfast, such as partnering with other breakfast food categories.
- In addition, as positive perceptions and awareness of promotions and advertising are the highest ranked demand drivers for orange juice, the industry should enhance promotion and advertising awareness and develop marketing programs that emphasize the positive attributes and benefits of orange juice.

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