

# Best Buy Case Study 3

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Presented by:

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# Agenda

- Case Overview
- Research Objective
- Variables & Final model
- Summary Statistics
- Analysis
- Results & Interpretations
- Limitations & Suggestions

# Case Overview

- Competitive consumer electronics industry — Low profit
- Potential strategy: bundle products
- Warranty sales
- Consumers segments on buying warranty

## Research Objective

- Identify customers who have high probability to purchase protection plan
- Data driven advertisement strategy on different customer segmentation

# Variables

## Dependent Variable

Warranty

## Key Independent Variables & expected relationship with Warranty

Appliances (-)	Price Category (+)	Family size (+)	Age (+)
Hispanic (?)	New customer (+)	House hold income (+)	My Best Buy (+)

## Control Variable

Weekend



# Summary Statistics

## Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
personid	3,206	48,620,356.0	23,174,550.0	10,004,010	31,884,768.0	47,241,515	71,483,028.0	99,564,010
age	3,206	66.9	3.7	52	65	67	69	86
hisp	3,206	0.1	0.3	0	0	0	0	1
PriceCategory	3,206	11.9	3.3	0	10	12	14	17
married	3,206	0.7	0.4	0	0	1	1	1
MyBestBuy	3,206	0.6	0.5	0	0	1	1	1
hhincome	3,206	45.3	64.3	0	17.0	31.1	52.8	1,312
appliances	3,206	0.7	0.5	0	0	1	1	1
Warranty	3,206	0.6	0.5	0	0	1	1	1
familysize	3,206	3.0	1.0	1	2	3	4	4
productgeneration	3,206	7.4	1.8	1	7	8	8	11
newcustomer	3,206	0.7	0.5	0	0	1	1	1
weekend	3,206	0.4	0.5	0	0	0	1	1

# Final Model (Logit)

***Warranty ~ PriceCategory + appliances + PriceCategory\*appliances + factor(mydata\$familysize) + log(hhincome+1) + hisp + newcustomer + MyBestBuy + age + weekend***

Key Independent Variable	Collinearity	Eliminated Reason
Price Category	Product Generation	↑ Product generation = ↑ Price category
Family Size	Married	Married implies family size of 2.

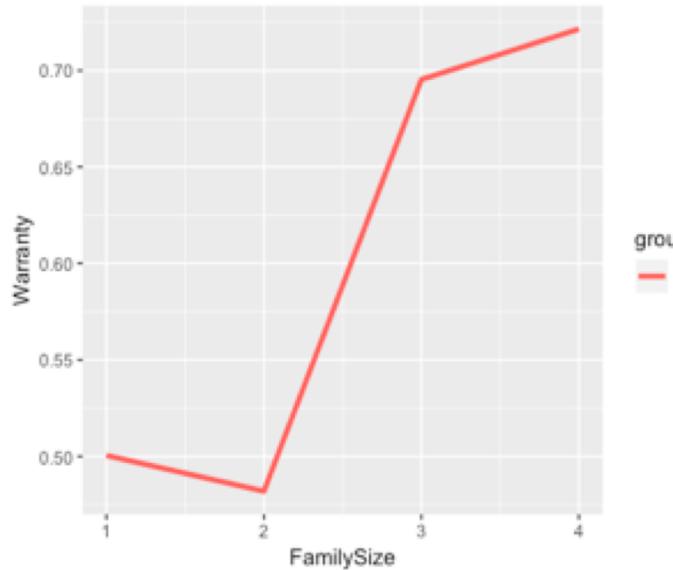


# Results

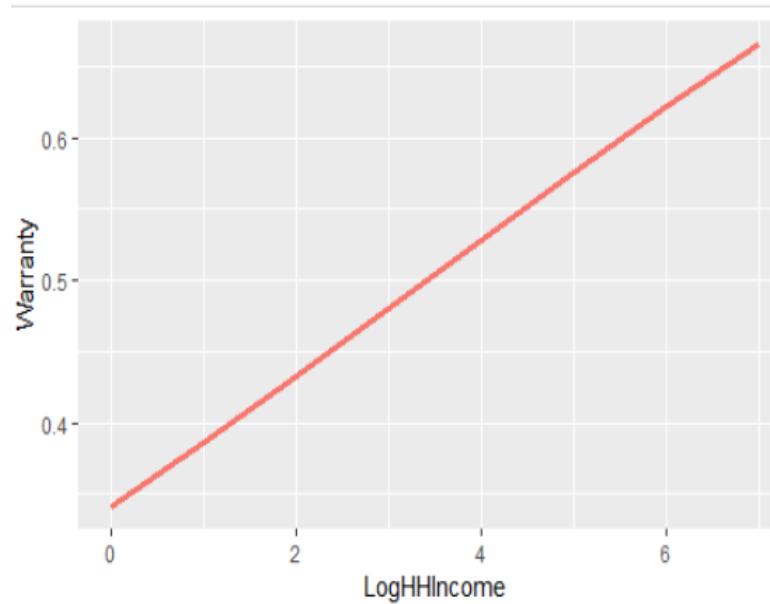
Dependent variable:	
	Warranty Marg.Eff.w/RobStdEr
PriceCategory	0.0328*** (0.0054)
appliances	0.6022*** (0.0493)
familysize)2	-0.0174 (0.0335)
familysize)3	0.1841*** (0.0265)
familysize)4	0.2117*** (0.0262)
log(hhincome + 1)	0.0449*** (0.0130)
hispanic	-0.3367*** (0.0353)
newcustomer	0.0065 (0.0199)
MyBestBuy	0.0319 (0.0200)
age	-0.0046 (0.0027)
weekend	0.0105 (0.0184)
PriceCategory:appliances	-0.0592*** (0.0063)
<hr/>	
Observations	3,206
Log Likelihood	-1,944.6850
Akaike Inf. Crit.	3,915.3700
<hr/>	
Note:	*p<0.05; **p<0.01; ***p<0.001

Significant and Intuitive

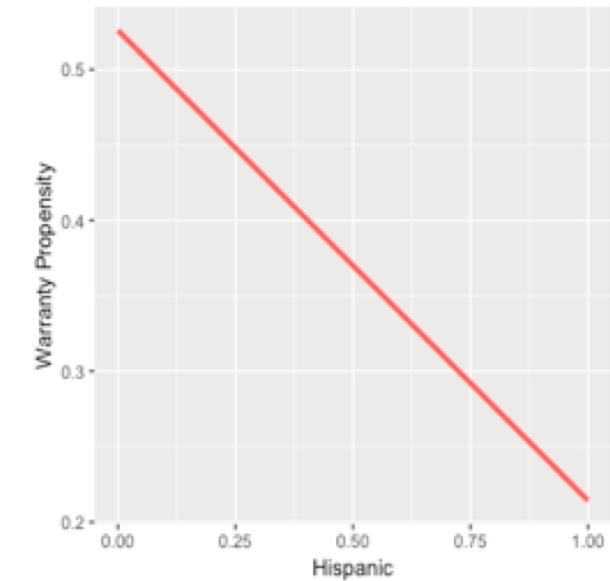
# Interpretation: Significant Variables



Customers with family size 3 have 18.41pp higher propensity of purchasing warranty  
Customers with family size of 4 have 21pp higher propensity of purchasing warranty

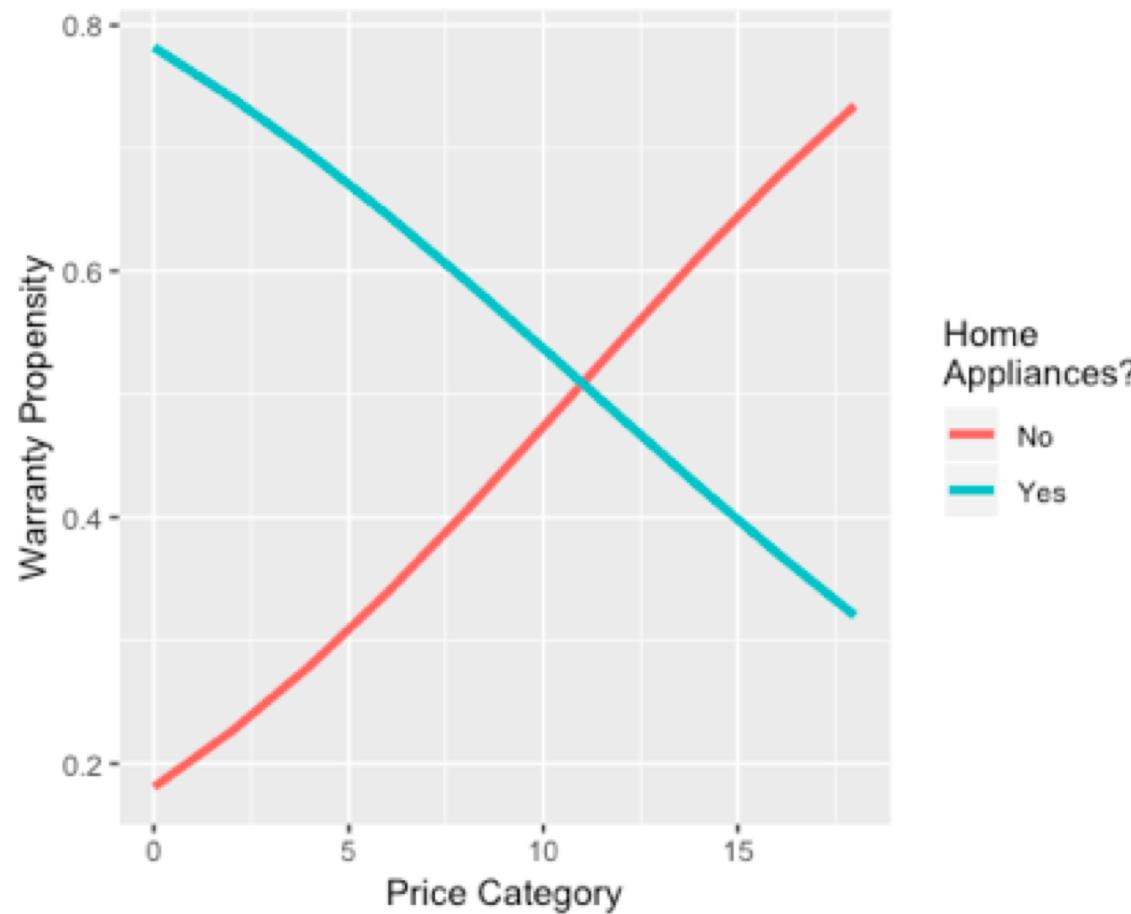


When hhincome increases by 1%, the propensity of purchasing warranty increases by 0.0004 pp.



Hispanic Customers have 33pp less propensity of purchasing warranty compared to non-hispanic customers.

## Results: Price Category and Appliance



For Home Appliances, increase in the price category is associated with decrease in the propensity to buy warranty.

# To whom we should target?

- Our target segments are

Non-home appliances (High Price)

Home appliances (Low Price)

Family size of 4 & 3

High household income

Non-Hispanics

Priority



# Limitations & Suggestions

- The data is limited (3206 observations)
  - Data gathered is only from Santa Clara store.
  - Old age customers.
- Missing data
  - Household income is zero for few observations
- Model Prediction Power **68.05%** < 80%
  - Increase the sample size.
  - We need to include more predictor variables like price at which warranties are sold, manufacturer's initial warranty time frame on the product, detailed product classification etc.



Thank You



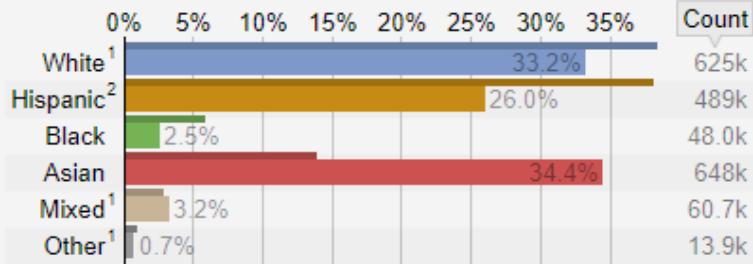
# Hispanic

## Race and Ethnicity

Percentage of the total population.

Scope: population of California and Santa Clara County

Santa Clara County — California



Count number of members in ethno-racial group

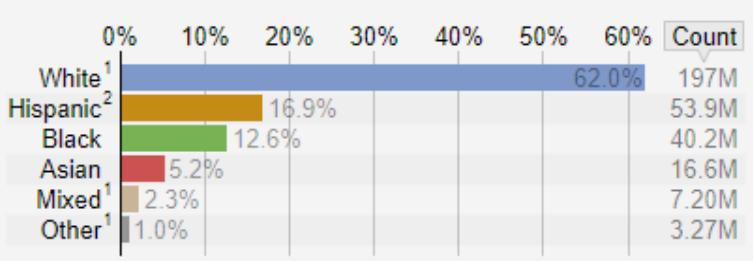
<sup>1</sup> non-Hispanic    <sup>2</sup> excluding black and Asian Hispanics

## Race and Ethnicity

Percentage of the total population.

Scope: population of the United States

United States



Count number of members in ethno-racial group

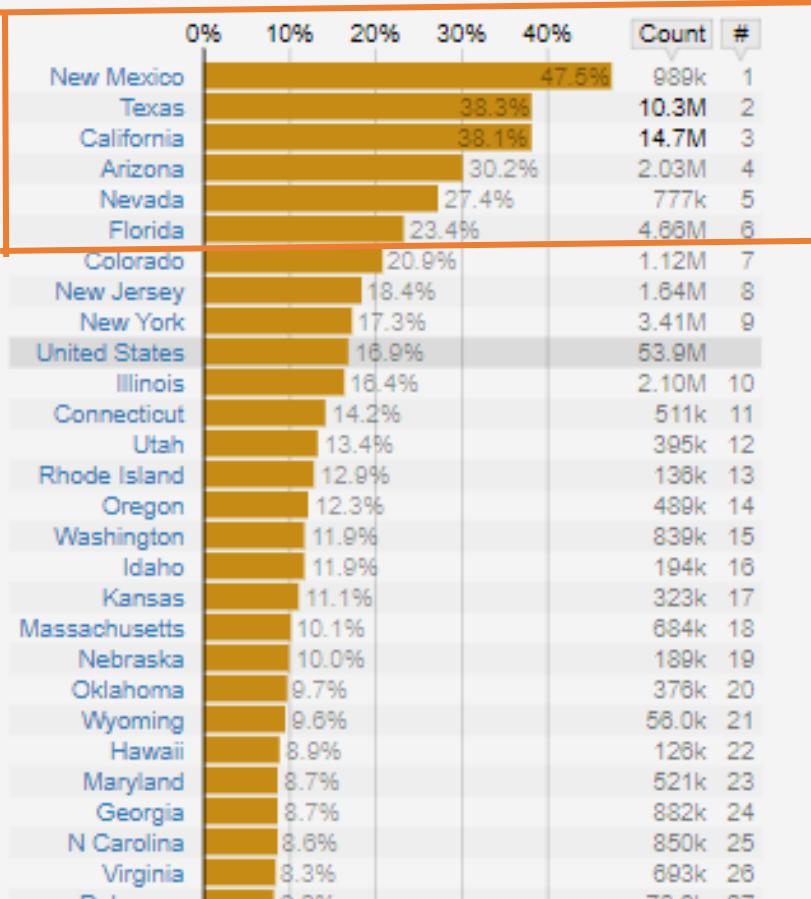
<sup>1</sup> non-Hispanic    <sup>2</sup> excluding black and Asian Hispanics

#1

## Hispanic<sup>1</sup> Population by State

Percentage of the total population.

Scope: population of the United States and selected states in the United States



#37

State with similar or more Hispanic population

No. of Best Buy Stores

New Mexico

5

Texas

103

California

117

Arizona

22

Nevada

10

Florida

64

Total number of stores in above states.

321

Out of 1008 (total) best buy stores in the above states.

31.84%

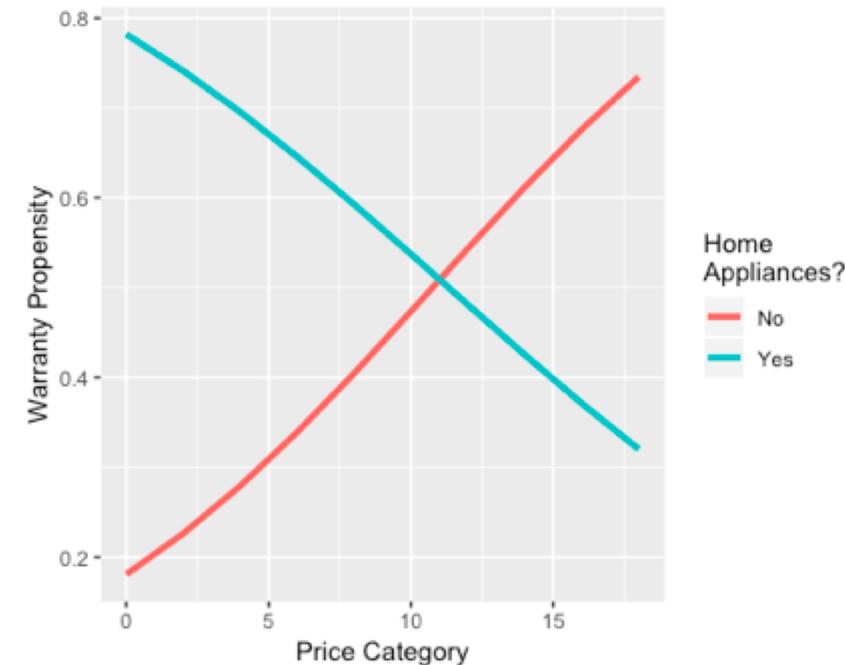


# Change in Probabilities

Categories	High-Low	Change
Non-Appliances (	=0.75-0.2	~0.55
Appliances	=0.75-0.35	~0.40
HHIncome	=0.68-0.35	~0.33
Non-hispanic vs hispanic	=0.5-0.2	~0.33
Family 4 vs Family1	=0.72-0.5	~0.21
Family 3 vs Family1	=0.7-0.5	~0.18

# Results: Price Category and Appliance

Regression Results		
	Dependent variable:	
	Warranty	
	Non Home Appliance	Home Appliance
	(1)	(2)
PriceCategory	0.14*** (0.03)	-0.11*** (0.02)
appliances		
newcustomer	0.08 (0.16)	0.0005 (0.10)
MyBestBuy	0.12 (0.17)	0.15 (0.10)
age	-0.03 (0.02)	-0.01 (0.01)
factorfamily2	0.10 (0.24)	-0.15 (0.18)
factorfamily3	1.06*** (0.24)	0.72*** (0.15)
factorfamily4	1.14*** (0.24)	0.87*** (0.15)
logincome	0.16 (0.10)	0.21** (0.07)
hisp	-1.73*** (0.28)	-1.20*** (0.21)
weekend	-0.004 (0.15)	0.06 (0.09)
PriceCategory:appliances		
Constant	-0.13 (1.25)	1.30 (1.01)
Observations	947	2,259
Log Likelihood	-539.41	-1,402.88
Akaike Inf. Crit.	1,100.81	2,827.77
Note:	*p<0.05; **p<0.01; ***p<0.001	



For non home appliances, a unit increase in price category is associated with 14pp increase in the propensity of warranty purchase.

For home appliances, a unit increase in price category is associated with 11pp decrease in the propensity of warranty purchase

