Loyalty Program Time Horizon: Effects of Policy Change on Consumer Behavior

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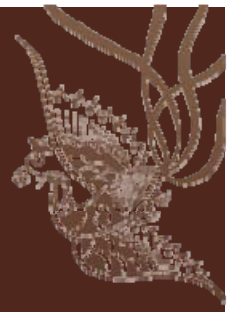
Loyalty Programs Are Popular



- United States
  - 1.8 billion membership in 2008
  - Almost double the membership in 2000
  - 6.2 active memberships per household
- Canada
  - 114 million active membership
  - 9.2 active memberships per household

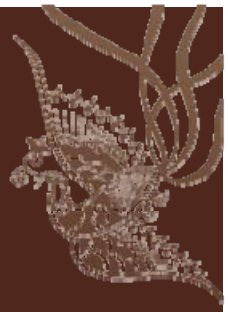
Source: The Big Sort: The 2009 Colloquy Loyalty Marketing Census

But Loyalty Program Can Also Be Expensive

Airline	Outstanding Mileage	Liability
American	607 billion	$1.7 billion
Delta/Northwest	N/A	$5.1 billion
United	478.2 billion	$4.2 billion

Source: Respective Company Annual Reports (2008)

How to Reduce Liability



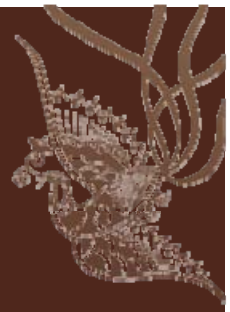
- Shorten expiration policy
- Increase reward threshold
- Reduce points per $

How to Reduce Liability

Our Focus

- Shorten expiration policy
- Increase reward threshold
- Reduce points per $

From Past Research

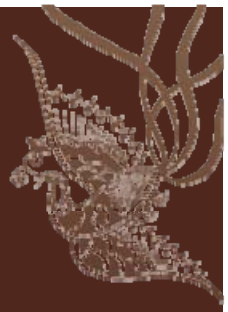


- Lewis (2004): “The selection of a program’s time horizon is an important element of loyalty program design” (p.291)
  - infinite, finite, and rolling time horizons

Business Practices

- 2006:
  - Aeroplan: 2006 No expiration → 12-month
- 2007
  - United Airlines: 36-month → 18-month
  - US Airways: 36-month → 18-month
  - American Airlines: 36-month → 18-month
  - Delta Airlines: 36-month → 24-month

Catch 22



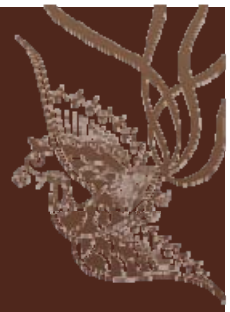
Potential Pros

- Reduced liability
- Reduced opportunistic behavior

Potential Cons

- Reduced motivation to participate
- Consumer Reactance

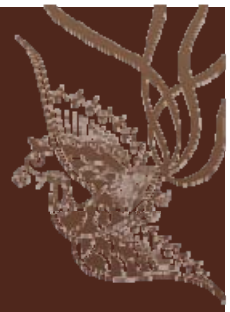
Consumer Reaction?



- “In an embarrassing bit of transparently self-serving spin, the news release explains the changes thusly: ‘These changes have been designed to renew, re-engage and revitalize Aeroplan's members' participation as the company evolves into a broad-based coalition loyalty program.’ Renew, re-engage, and revitalize? More like outrage, alienate, and devalue.”

Source: SmarterTravel.com

Our Research Questions

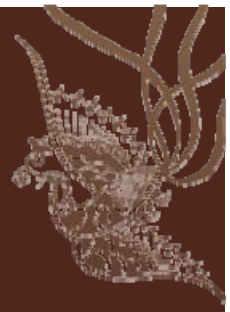


- Store-Level
  - Will participation in the program suffer due to policy change?
  - Do store sales suffer as a result?
- Consumer-Level
  - How will consumers adjust their purchase behavior to accommodate policy change?
  - How will different consumers respond differently to policy change?

STORE-LEVEL ANALYSIS

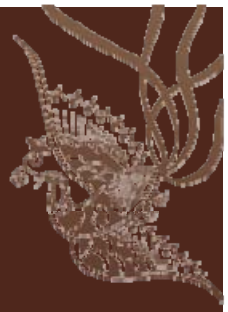
1. Will participation in the program suffer due to policy change?
2. Do store sales suffer as a result?

Data



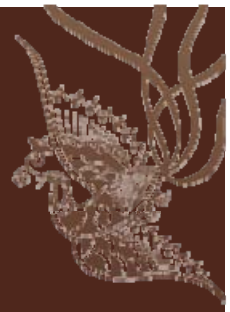
- 19 stores within a medium-size convenience store chain
- Loyalty Program
  - Started between April 2004 and September 2005
  - Policy switch: March 2007
- Store and consumer-level data between January 2006 and March 2009

Old Program Policy



- Infinite Time Horizon
- Point ratio: 10 point per gallon of fuel; 20 points per dollar in-store
- Reward structure tiered:
  - 500 Points: a fountain drink/coffee/$1 off
  - 2400 Points: pint-size drink or $2 off
  - 6000 Points: gallon of milk or deli sandwich
  - 10000 Points: 8-piece chicken snack or 2 free 12-pack 7-Up

New Program Policy



- Finite Time Horizon: points earning/redemption restarts every month
- Point ratio: unchanged
- Reward structure tiered:
  - Gold (500 Points): 2 cents off per gallon, free snack or $1 off coupon
  - Platinum (1500 Points): 4 cents off per gallon, free higher-value snacks or $2 off coupon

Store-Level Outcomes

- Store revenue
  - Fuel sales (Gallons)
  - Convenience store sales ($)
- Program Participation
  - New program enrollment
  - # of active members

Sales: Panel Regression

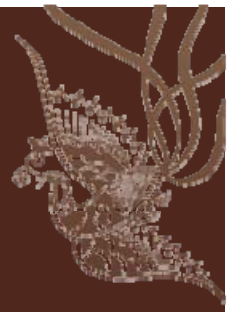
Fixed-Effect Panel Regression:

$$Y_{it} = \beta_{0i} + \beta_1 * Policy_{it} + \beta_2 * X_{it} + \beta_3 Y_{it-1} + e_{it}$$

Note: X is a vector of control variables, including program history and seasonality

Estimation: SAS TSCSREG procedure; OLS

Participation: Poisson Regression



Probability Distribution for Each Observation:

$$f(Y_{it};\lambda_{it}) = \frac{\lambda_{it}^{Y_{it}} \exp(-\lambda_{it})}{Y_{it}!}$$

Arrival Rate:

$$\lambda_{it} = \exp(\gamma_i + \gamma_1 Policy_{it} + \gamma_2 X_{it} + \gamma_3 Y_{it-1})$$

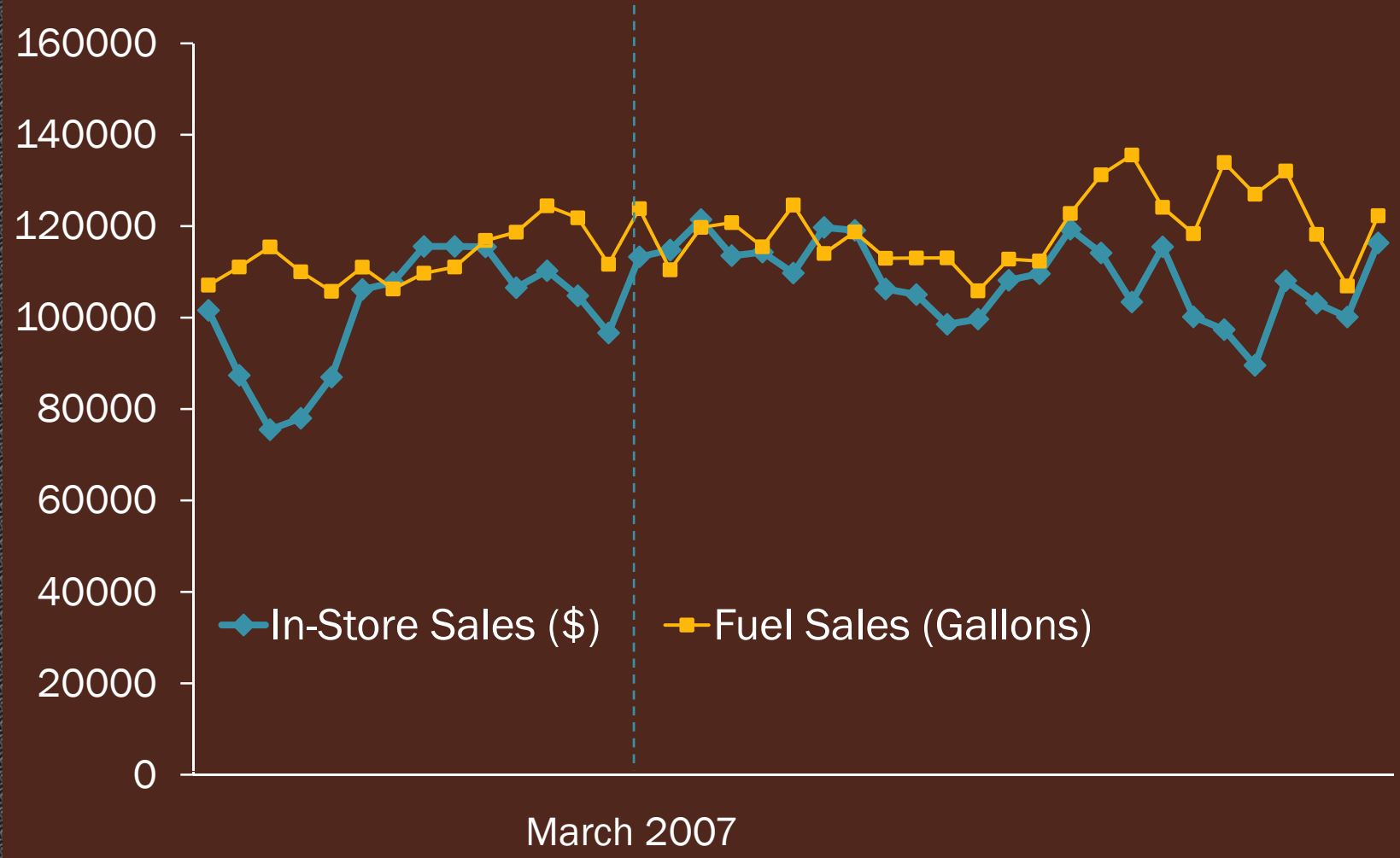
Estimation: SAS COUNTREG procedure; Maximum Likelihood?

Results

Dependent Variable	R^2/LL	Policy	Program History	Lag
In-Store Sales	.84	.05*	n.s.	.49***
Fuel Sales	.81	n.s.	n.s.	.54***
New Enrollment	-22527	.24***	-.01***	.001***
Active Members	--11460	.07***	.009***	.0004***

*p < .1; **p < .05; ***p < .001

Total Sales


160000
140000
120000
100000
80000
60000
40000
20000
0
In-Store Sales ($)
Fuel Sales (Gallons)
March 2007

Number of Active Consumers

Store-Level Summary

- Store revenues remain intact from the policy change
- Participation in the loyalty program actually increased rather than decreased

CONSUMER-LEVEL ANALYSIS

1. How will consumers adjust their purchase behavior to accommodate policy change?
2. How will different consumers respond differently to policy change?

What Have We Learned From the Promotions Literature?

- Coupon Expiration Date
  - Longer coupon duration increases coupon use; profitability outcome depends (Krishna and Zhang 1999)
  - Second coupon redemption peak near expiration date (Inman and McAlister 1994)

What Have We Learned From the Promotions Literature?

- Promotion Redemption Window

(Cheema and Patrick 2008)

Feasible

- 30% off *anytime* between noon and 4PM

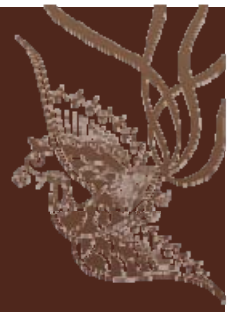
Precise

- 30% off *only* between noon and 4PM

LOYALTY PROGRAM IS NOT THE AVERAGE PROMOTION

Need to consider consumer usage level

Usage Level is Important Consideration



- Lal and Bell (2003): Grocery Store
- Liu (2007): Convenience Store

H1: Program Time Horizon and Focus

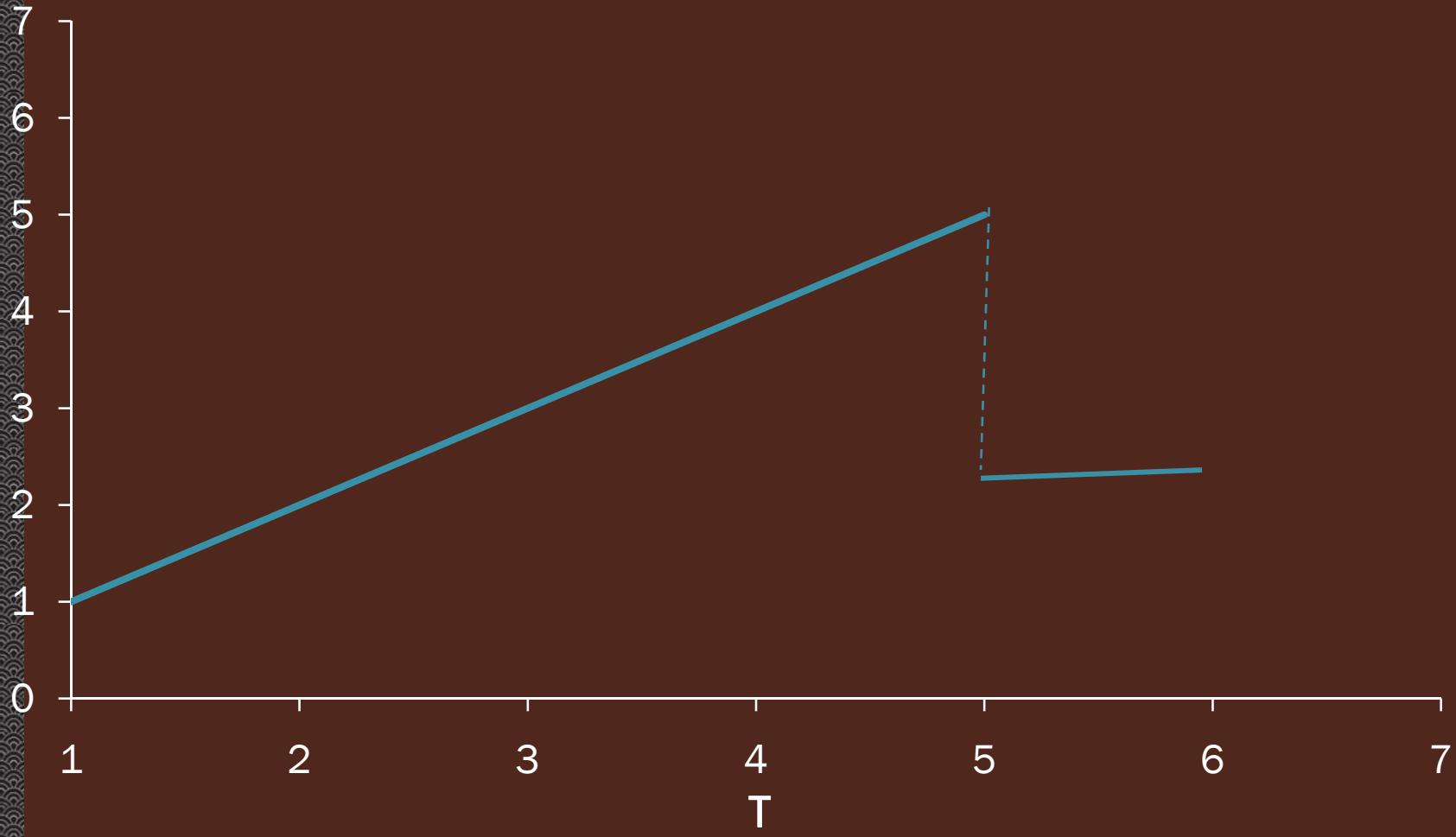
Light Buyers Moderate Buyers Heavy Buyers

Feasibility

Precision

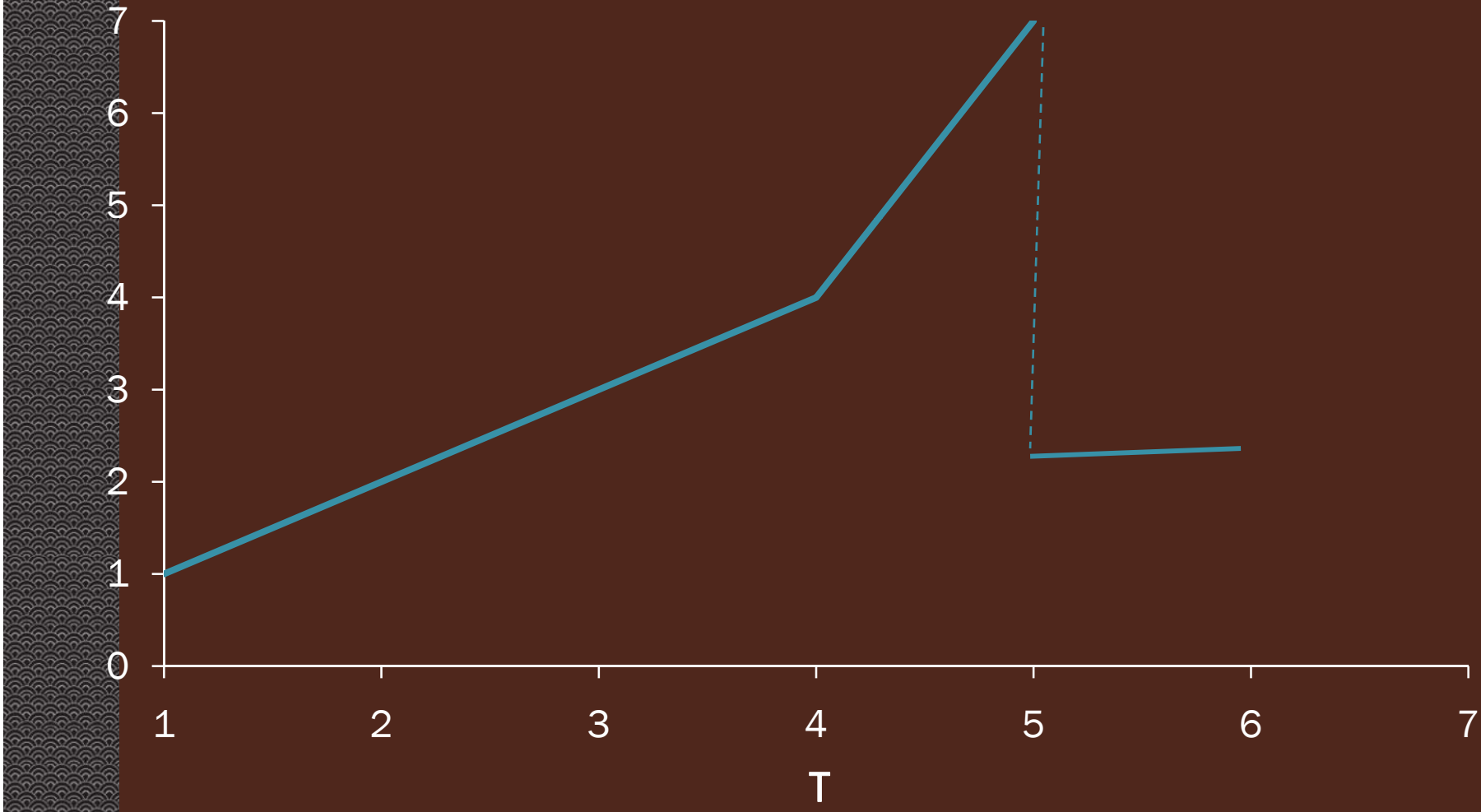
Infinite Time Horizon Finite Time Horizon

Reward Pressure/Goal-Gradient/Endowed Progress

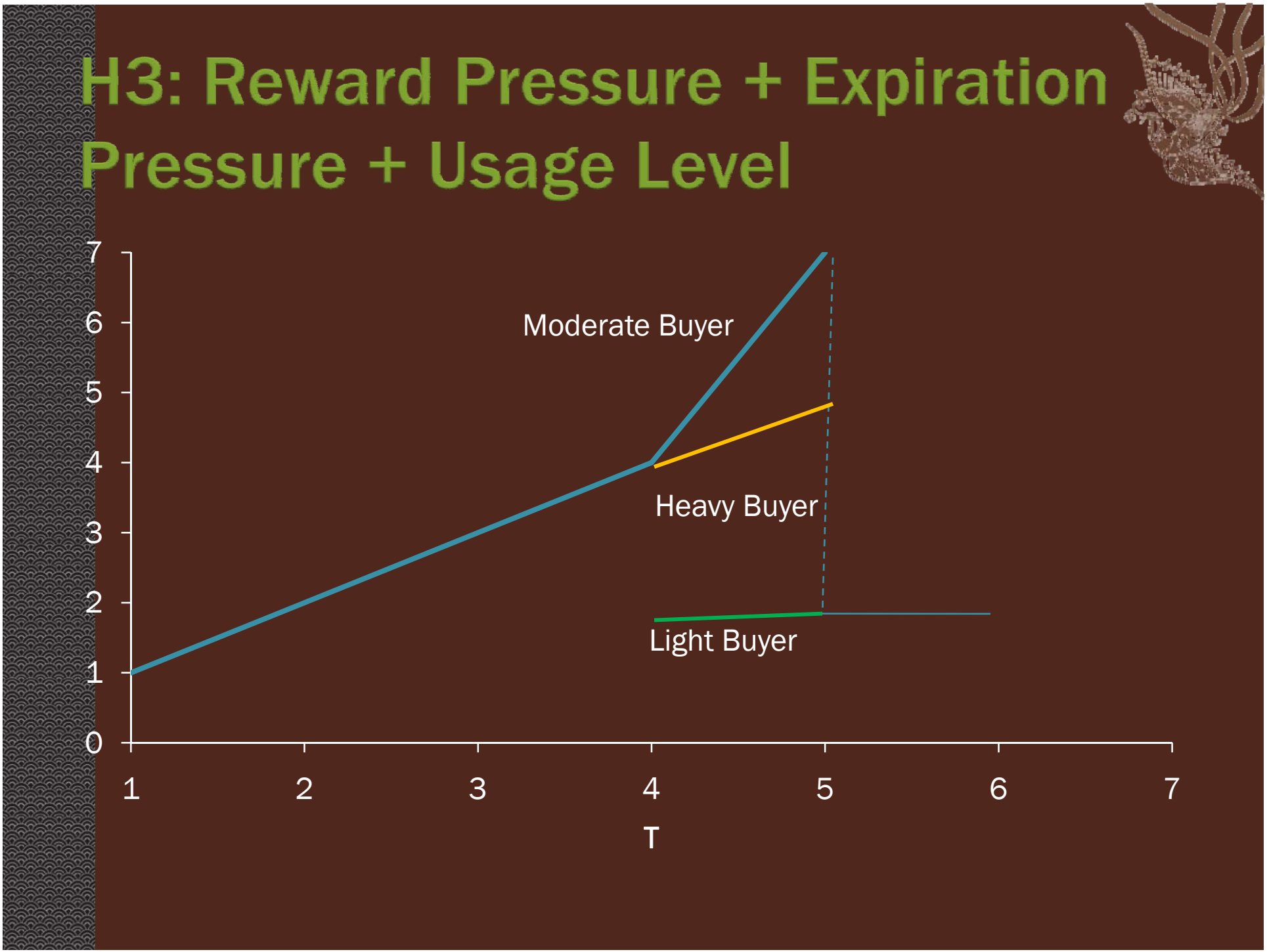


Taylor and Neslin (2005), Kivetz, Urminsky and Zheng (2006), and Nunes and Dreze, 2006

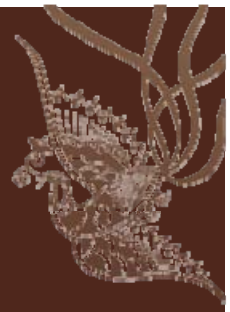
H2: Reward Pressure + Expiration Pressure



H3: Reward Pressure + Expiration Pressure + Usage Level



Plan for Individual-Level Analysis



- Basket composition & size
- Frequency of purchase
- Retention in the program

Exploratory Results

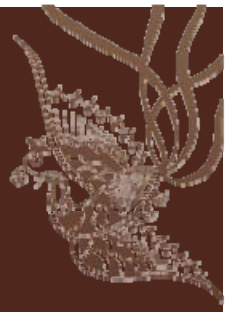
Dependent Variable	R^2	Policy	Program History	Lag
In-Store Size	.77	-.07**	.32***	.52***
Fuel Size	.72	-.14***	.10**	.62***
In-Store Freq	.74	.06*	-.11***	.60***
Fuel Freq	.80	.13***	-.09**	.70***

*p < .1; **p < .05; ***p < .001

Possible Explanations

- Loyalty program members are making small purchases at the end of the month to reach the deadline.
- Existing members are buying more frequently due to program switch but large number of new members diluted the averages.

For the Future



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THANK YOU! QUESTIONS?

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