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# Single-Use Items Reduction: Disposable Cups

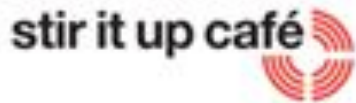
— Achieving Zero-Waste —

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# UBC Food Services

- Operates 30+ food outlets and all residence dining halls
- 10+ dedicated coffee shops; coffee sold at many more locations



# UBC Food Services

## Old Policy

- 15-cent discount on hot beverages to consumers who brought reusable cups

## New Policy (September 2018)

- 25-cent surcharge on hot beverages to consumers who do not bring reusable cups

# Ike's Café Menu

Prices reduced by 25-cents

## Selections

### Salad Dressing:

Balsamic, Ranch, Italian

### Four O'Clock Tea Selection:

**Black:** Breakfast Blend, Black Chai, Earl Grey

**Green:** Coconut Ginger, Japanese Green

**Herbal:** Lemon Ginger, Peppermint, Sweet Camomile

**+ \$0.25 FOR A PAPER CUP**

[food.ubc.ca/cups](http://food.ubc.ca/cups) #ubczerowaste

LOWERED PRICES. Paper cup surcharge.

**ike's**  
Café

## Hot Beverages

	12 oz	16 oz	20 oz
Drip Coffee	\$1.95	\$2.25	\$2.55
Americano	\$2.45	\$2.75	\$3.25
Latte   Capp	\$3.60	\$4.10	\$4.60
Mocha	\$4.30	\$4.60	\$5.10
Chai Tea Latte	\$3.80	\$4.30	\$4.75
Hot Chocolate	\$3.25	\$3.55	\$3.80
London Fog		\$4.10	
Fair Trade Tea	\$2.05	\$2.05	\$2.05

Extra Syrup   Soy		\$0.50	\$0.70
Espresso	\$2.25 (x1)	\$2.45 (x2)	
Extra Shot			\$0.80

## Cold Beverages

Odwalla	\$4.99
Water Dasani	\$2.49
So Good Soy	\$1.99
Bottled Juices (Nestea)	\$2.89
Soft Drinks	\$2.69
Vitamin Water	\$3.25
Coconut Water	\$2.95
Milk	\$1.85   \$2.75
Iced Latte	\$4.25
Iced Mocha	\$4.75
Iced Americano	\$2.95

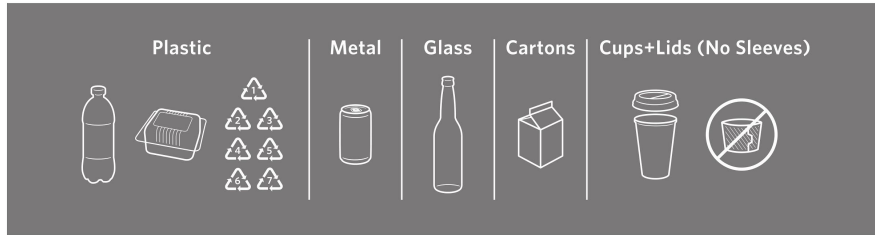
25-cent surcharge for disposable cups



# Key Questions:

- Does the pricing strategy incentivize sustainable behaviour in the form of consumers switching from disposable to reusable cups?
- Does the pricing strategy affect UBC Food Services' sales?
- Based on the impacts of the pricing strategy, what other incentives or disincentives can promote sustainable behaviour?

# Background: The Issue With Disposable Cups



- Confusion around the correct location of each cup component (most could not be recycled until recently) means many are recycled incorrectly
- For those that are recycled correctly, the polyethylene cup coating is difficult and costly to separate
- High volume of cups (making up nearly 50% of trash cans on Vancouver streets) increases bin disposal frequency and tipping fees, in addition to consuming landfills

# Background: Community Outlook on Single-Use Items

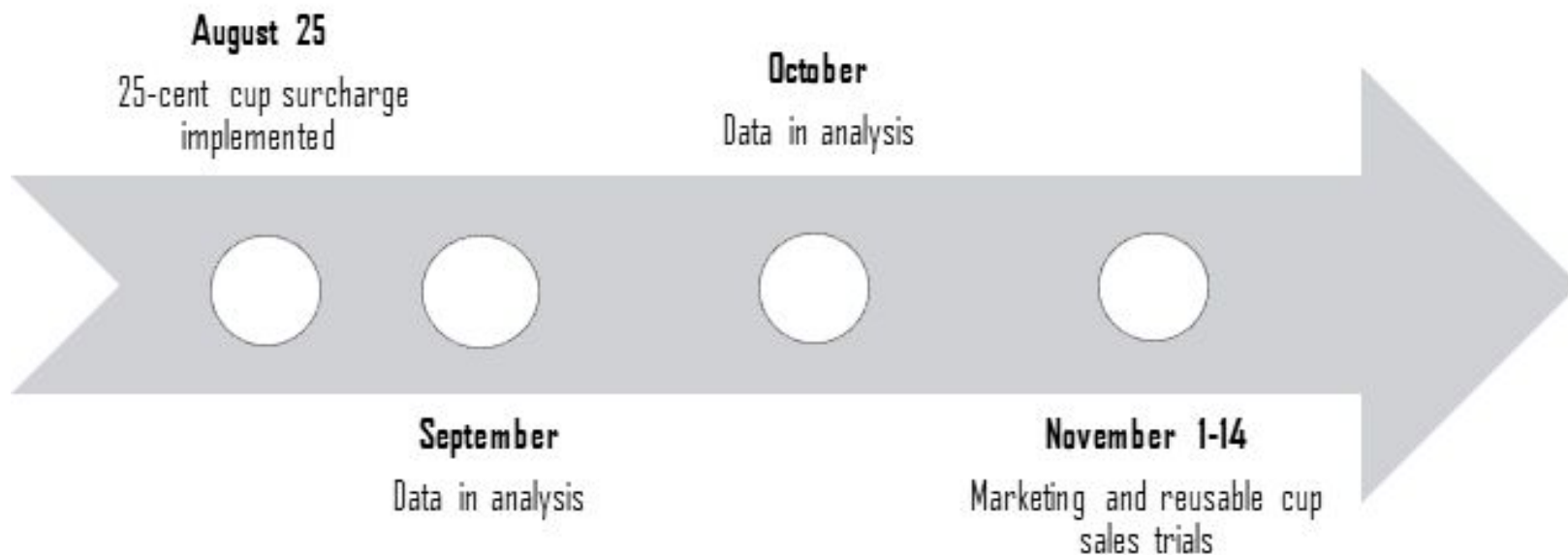
## CAMPUS

- UBC Zero Waste Food Ware Strategy (2018) highlights the role of disposable cups in slowing UBC from reaching its goal of 80% waste diversion by 2020
- Audit of composition of materials found in organics collection bins found that **disposable cups are the most frequent contamination item** and **highest volume item in garbage and recycling bins**

## MUNICIPALITY

- Vancouver sees **2.6 million disposable cups thrown into the trash every week** and spends \$2.5 million annually in collecting and disposing of single-use items
- Vancouver's Single-Use Item Reduction Strategy (2018) is expected to be completed by 2025 and focuses on phasing out items like disposable cups, plastic shopping bags and plastic straws

# Research Structure





# Framework

**We want to understand how consumers respond to the new pricing strategy in terms of:**

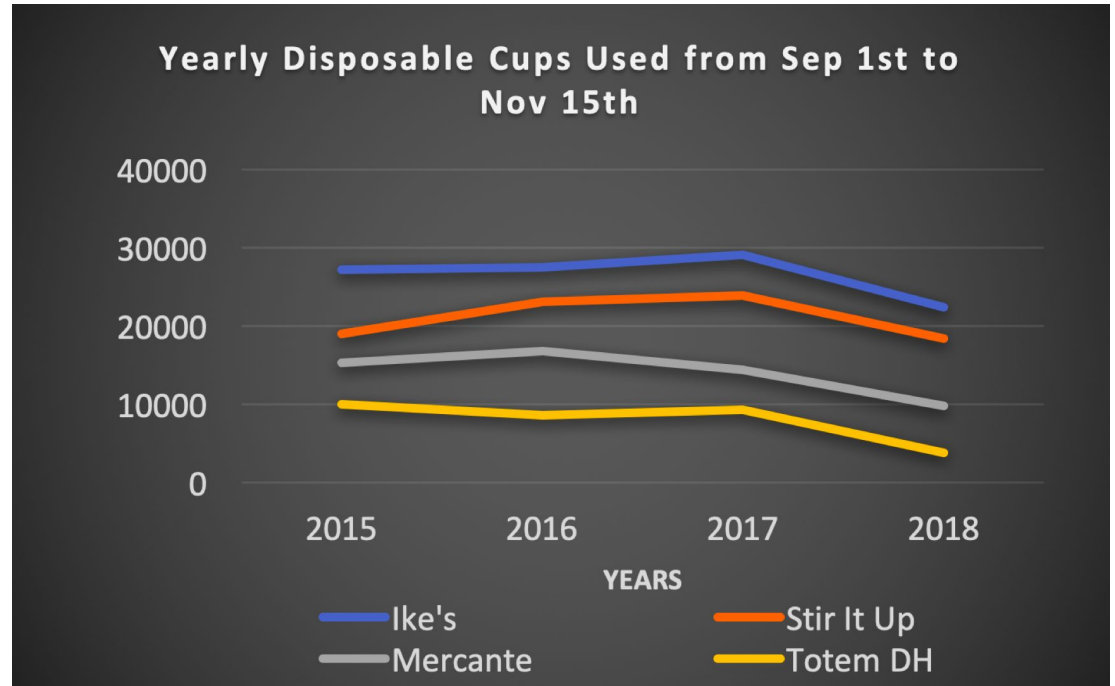
- Change in proportion of drinks sold in disposable cups
- Change in consumers' consumption of hot beverages

## **Analysis: 5 Locations**

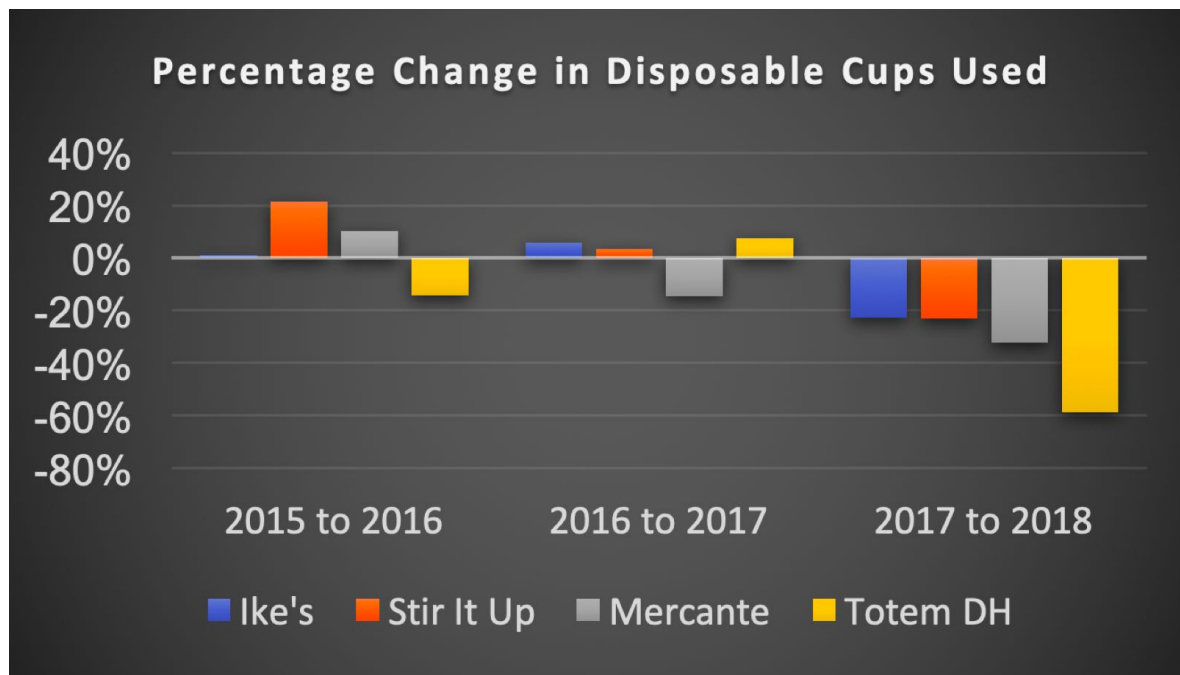
- Ike's Café
- Stir It Up Café
- Feast @ Totem Park (Dining Hall)
- Mercante
- Hero Coffee and Market

# Disposable Cup Sales

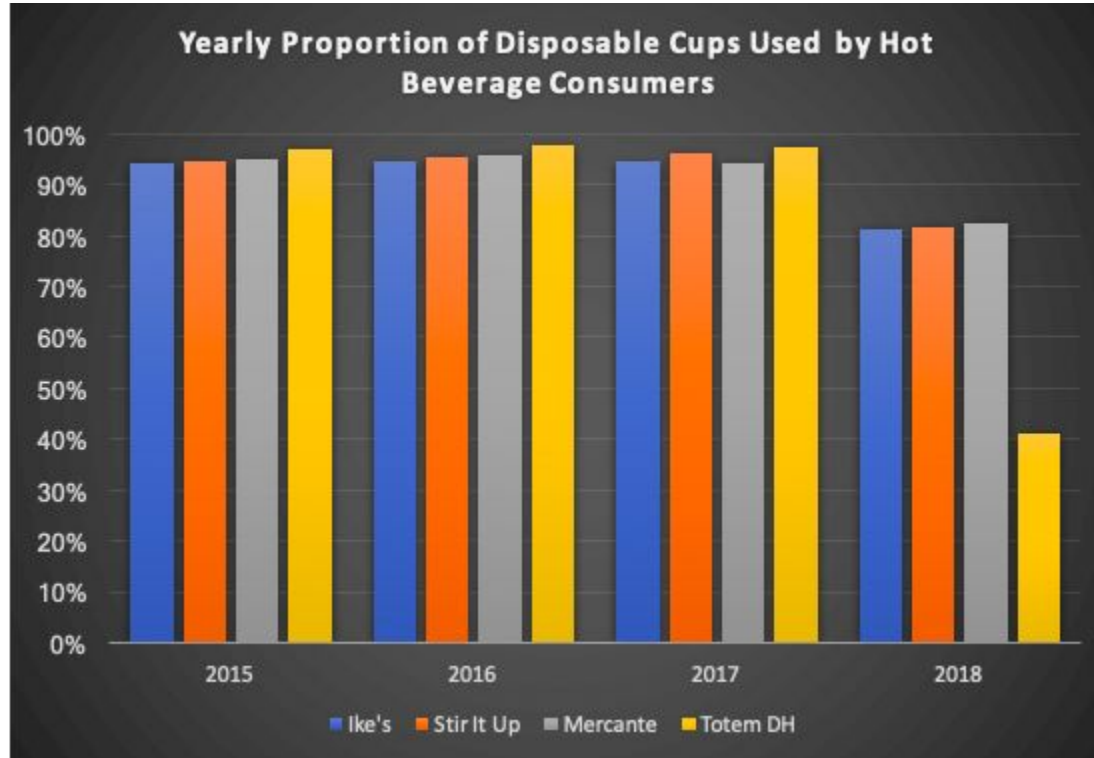
Does the new pricing strategy promote consumers switching from disposable to reusable cups?



# Disposable Cup Sales (Cont'd)



# Are Hot Beverage Consumers Less or More Likely to Use Disposable Cups?



# Framework (Elasticity on Disposable Cups Used)

## Key Data

1. Hot beverage sales from Sep. 1st to Nov. 15th (2017)
2. Hot beverage sales from Sep. 1st to Nov. 15th (2018)
3. Number of disposable cup used from Sep. 1st to Nov. 15th (2017)
4. Number of disposable cup used from Sep. 1st to Nov. 15th (2018)
5. Price of disposable cups (2017)
6. Price of disposable cups (2018)

# Findings

## Proportion of Hot Beverage Consumers Using Disposable Cups

- Took the ratio of relative changes in proportion of disposable cups used by hot beverage consumers from 2017 to 2018 and relative changes in disposable cup price from 2017 to 2018

	Ike's	Stir It Up	Mercante	Totem DH	Total	Total (without Totem DH)
Elasticity	-0.30	-0.32	-0.26	-1.68	-0.73	-0.63

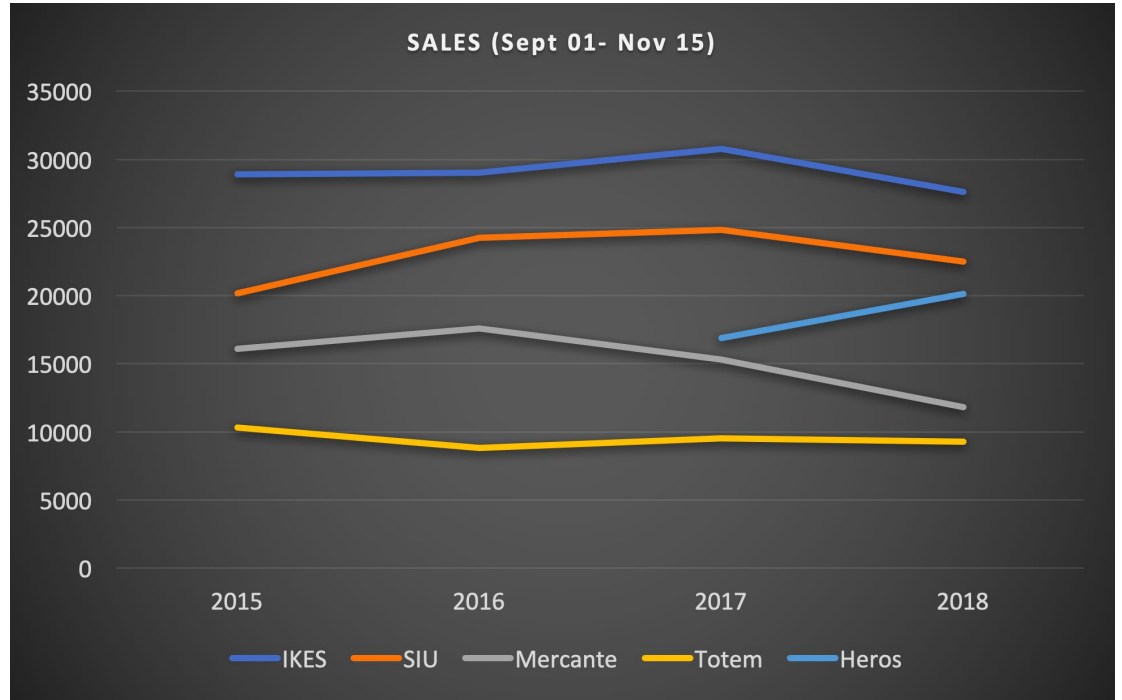
- Totem Park Dining Hall experienced the biggest change in consumer behavior
- Negative values exhibit the negative relationship between consumer's likelihood to use disposable cup and disposable cup price

# Framework: Sales Analysis

1. Yearly total sales comparison in term of
  - a. Stand-alone outlets
  - b. First year residence outlets
2. Comparing Actual sales from 2018 to forecasted figures
3. Price elasticity of sales analysis

# Impact on Sales

Does the pricing strategy affect UBC Food Services' sales?





# Overall Change in Sales

Year	Ike's	Stir it up	Mercante	Totem DH	Hero's	Δ Sales
2015	28895	20158	16105	10335		
2016	29027	24240	17608	8816		5.56%
2017	30769	24833	15318	9515	16887	0.93%
2018	27602	22488	11834	9275	20125	-6.16%

# Segmented Changes in Sales

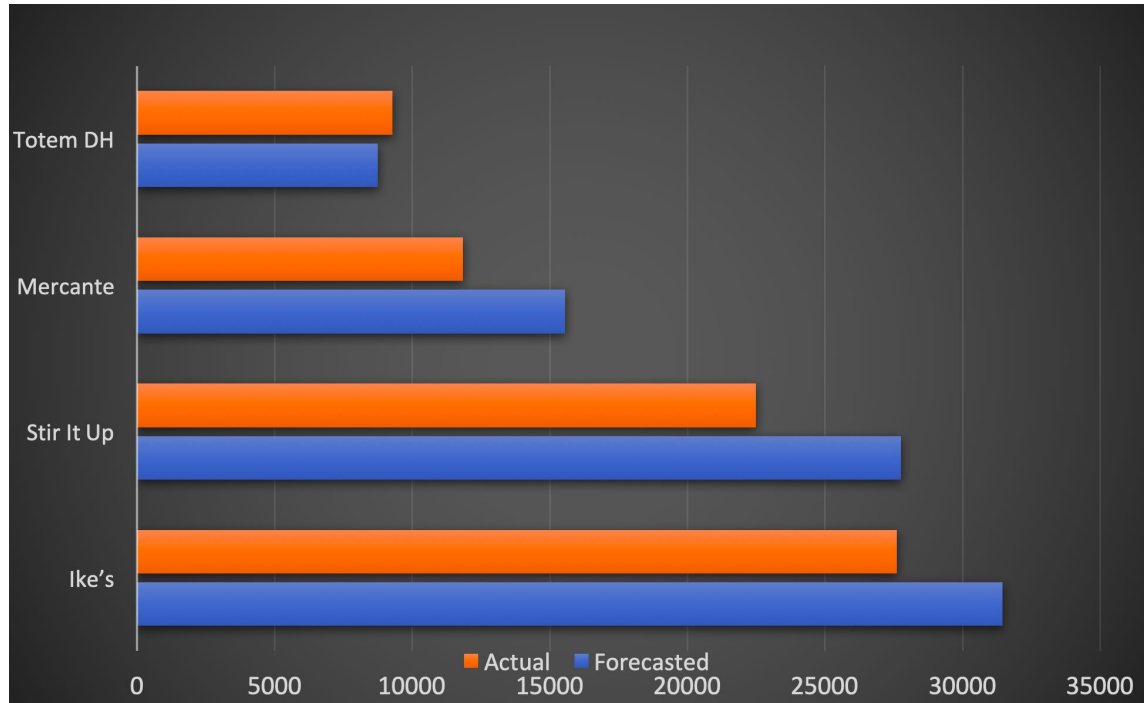
## Stand-alone outlets

Year	Ike's	Stir it up	Mercante	Δ Sales
2015	28895	20158	16105	
2016	29027	24240	17608	8.8%
2017	30769	24833	15318	0.1%
2018	27602	22488	11834	-12.7%

## Residence Outlets

Year	Totem	Hero's	Δ Sales
2015	10335		
2016	8816		-14.7%
2017	9515	16887	7.9%
2018	9275	20125	11.4%

# Sales Forecasts versus Actual Sales (2018)



# Sales Forecasts versus Actual Sales (2018)

- Totem Park Dining Hall has met and exceeded its forecasted sales figure
- Ike's, Stir It Up and Mercante were unable to meet their forecasted figures & have seen a decline in sales from 2017

Sales 2018	Ike's	Stir It Up	Mercante	Totem DH
Forecasted	31,435	27,749	15,559	8,735
Actual	27,602	22,488	11,834	9,275

# Framework: Elasticity on Sales

## Key data points

1. Number of hot beverage sales in 2017
2. Number of hot beverage sales in 2018
3. Price of disposable cup in 2017
4. Price of disposable cup in 2018

*\*All data corresponds to a 2.5 month period from Sept 01 to Nov 15*

# Findings

Price elasticity on sales after cup was re-priced from \$0.15 to \$0.25

	Ike's	Stir It Up	Mercante	Totem DH	Hero's
$E_d$ (absolute)	-0.154	-0.142	-0.341	-0.038	0.288
$E_d$ (log)	-0.119	-0.108	-0.282	-0.028	0.191

- Ike's, Stir It Up, Mercante and Totem Park Dining Hall depict a negative relationship between sales and prices
- Hero's Coffee and Market is the only outlet that depicts a positive relationship between sales and prices
- Overall, hot beverage consumption is more or less inelastic

# Framework: Marketing Trials and Provision of Alternatives

The effectiveness of complements to the cup surcharge in encouraging reusable cup use were tested with:

**(1) in-store marketing**

**(2) the in-store sale of reusable cups**

- For a two week period in November, common marketing material was placed in Ike's Café and Stir It Up Café to determine its effect on disposable cup sales
- Ike's Café offered reusable cups for sale over the same timeframe

# Marketing Material

Signage in Ike's Café and Stir It Up Café

Brought your own mug.

**YOU'RE A FRIGGIN'  
CHAMPION!**

**WAY TO GO,  
SUPERSTAR.**

Thanks for bringing your mug.

Our coffee. Your mug.

**LEGEND IN  
THE MAKING.**

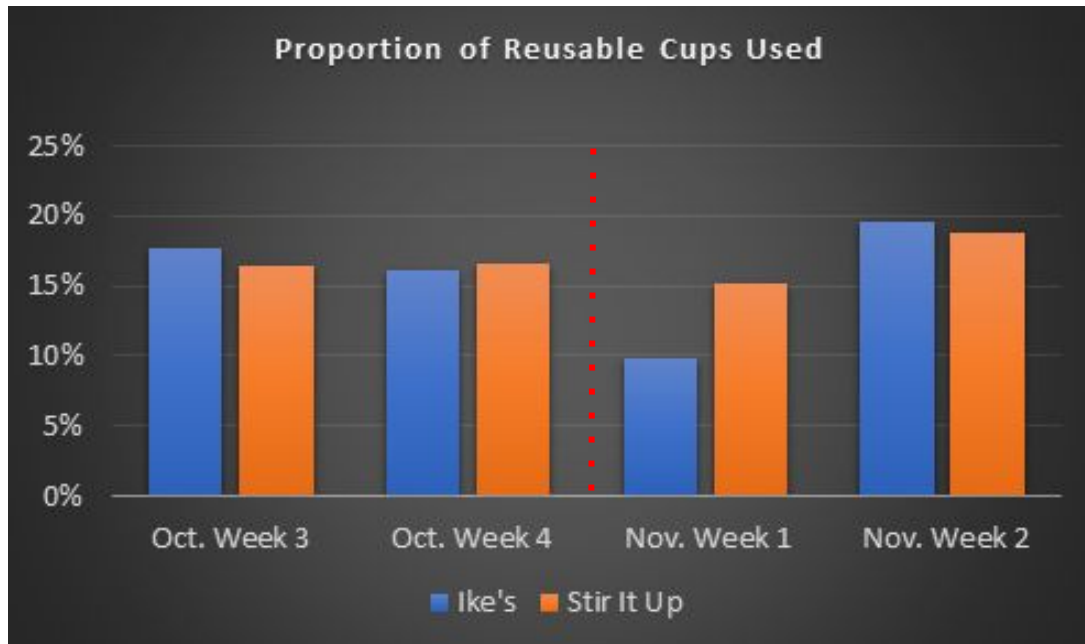
*Marketing Material designed to provide positive feedback to consumers bringing their own mugs, based on success found with immediate positive feedback in behaviour reinforcement (Armellino et al., 2012)*



# Marketing Strategies at Ike's Café



# Proportion of Reusable Cups Used: Pre and Post-Trial



	Ike's	Stir It Up
October Week 3 <b>PRE-TRIAL</b>	17.7%	16.5%
October Week 4 <b>PRE-TRIAL</b>	16.0%	16.6%
November Week 1 <b>TRIAL</b>	9.8%	15.1%
November Week 2 <b>TRIAL</b>	19.6%	18.8%

# Change in Proportion of Reusable Cups

	Ike's	Stir It Up	Mercante	Totem DH
Sep-Oct	-6.0%	-9.7%	-1.1%	-11%
Oct-Nov	0.3%*	2.6%*	-6.9%	-3.7%

Both trial locations, Ike's and Stir It Up, saw an increase in the proportion of reusable cup users over the marketing trial period while the wider trend has been a decline

*\*Marketing trial locations over marketing trial period*

# Discussion

Totem Dining Hall	Mercante	Ike's Cafe
<ul style="list-style-type: none"><li>• Highest percentage decrease in disposable cups used</li><li>• Slight Increase in sales</li><li>• Access to ceramic mugs and cleaning facilities</li><li>• Existing efforts to promote sustainable behaviour: free provision of reusable container and charge on disposables</li></ul>	<ul style="list-style-type: none"><li>• Largest drop in sales</li><li>• Small decrease in disposable cups used</li><li>• Coffee as a secondary offering</li><li>• High level of irregular/impulse purchasers; impulse purchasing offset by unexpected higher cost</li><li>• Lack of planning necessary in bringing reusable cups</li></ul>	<ul style="list-style-type: none"><li>• Mixed impact on sales</li><li>• Steady percentage decrease in disposable cups</li><li>• Coffee-focused outlet likely to attract coffee-focused consumers</li><li>• Regular and expected cost (cup surcharge) plays a role in shifting behaviour around cup choice while maintaining beverage purchases</li></ul>

## Discussion (Cont'd)

- Every coffee outlet except for Mercante saw a constant increase in sales for the month of September
- Every coffee outlet except for Totem Park Dining Hall and Hero Coffee saw a decrease in sales for October
- Strong possibility of underlying variables that could have affected hot beverage sales (weather, appearance of other coffee outlets on campus etc.)

# Recommendations

**Retain the pricing strategy for now:** Success in reducing disposable cup usage by 30% (decrease in 22,250 disposable cups) over 2017 totals and maintaining aggregate sales through 25-cent surcharge. See how the sales for November and December this year compare to last year, and determine whether sales trajectory follows September pattern or October pattern.

**Concentrate efforts to reduce disposable cup usage, including marketing, at coffee-focused locations (Ike's Café, Stir It Up Café):** Consumers at these locations responded to marketing trials.

# Limitations

## Understanding Mixed Sales Data

- Differences in aggregate sales trends for September (+) and October (-)
- Cold beverage sales analysis would provide support for unmet forecasted sales figures as a result of weather differences

## Cost-Benefit Analysis

- Financial impact of repriced cup on disposal fees, bin collection and sales revenue
- Drop in revenue could be offset by savings in other areas due to lower volume of disposable cups

# Future Research

## Mug Share Program

- Growth of the mug share program at UBC will lower the costs associated with regularly bringing a reusable cup (time, access to cleaning facilities, cleaning)
- Targeting irregular/impulse consumers: the mug share program is an effective way to target consumers who do not plan their purchases (seen at outlets where coffee is a secondary offering)



**Thank you!**

**Any Questions?**