Beers and Diapers Redux

Introduction

- Experimentation is a key component of the resource allocation portfolio.

- It allows us to evaluate the consequence of different marketing actions.

- In this module we will

  - Understand some basic experimental designs

  - Follow a case study of a firm that implemented experiments on TV and the Web

Correlation vs. Causation

- Does skipping breakfast cause obesity?
  - http://www.webmd.com/diet/news/20080303/eating-breakfast-may-beat-teen-obesity
- Alternative explanations:
  - Physical activity
  - Lack of sleep

"Half the money I spend on advertising is wasted; the trouble is I don't know which half."

—John Wanamaker
Father of Modern Advertising

Marketing Return on Investment

- Why is it hard to measure the return on marketing spending?
  - TV advertisements
  - Promotion
  - Better customer targeting
- **Basic issue: Would you have achieved the same sales increase without the increased advertising spend?**
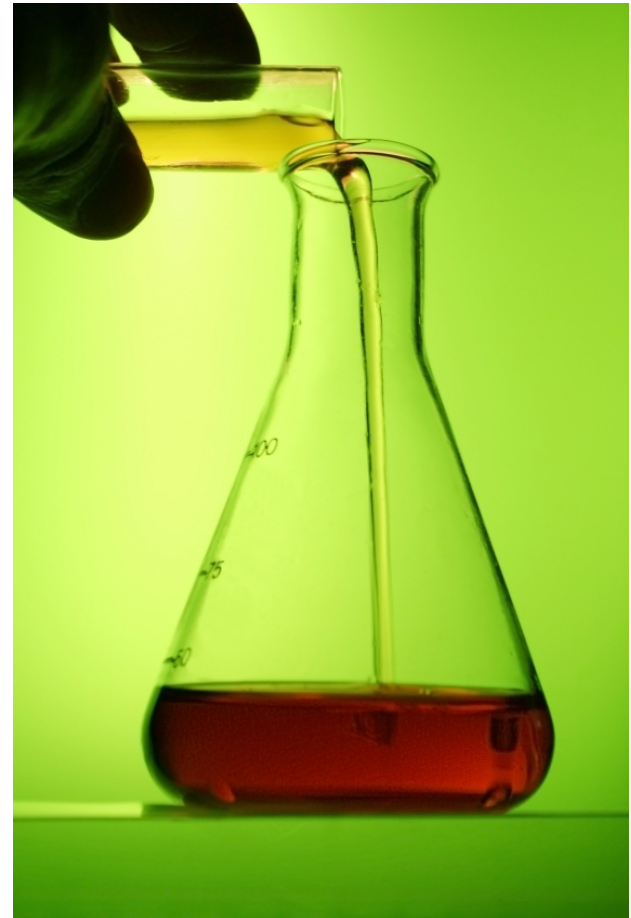
Basic Experiment Design

What Establishes Causality?

- Change in marketing mix produces change in sales
  - Increasing Advertising $ ⟶ Increased Sales
- No sales increase when there is no change in the marketing mix
  - No Increase in Advertising $ ⟶ Same Sales
- Time Sequence
  - Increased advertising $ today leads to higher sales tomorrow
- No other external factor
  - When advertising was increased, one of the competitors left the market. So sales increased because of less competition, not because of increased advertising.
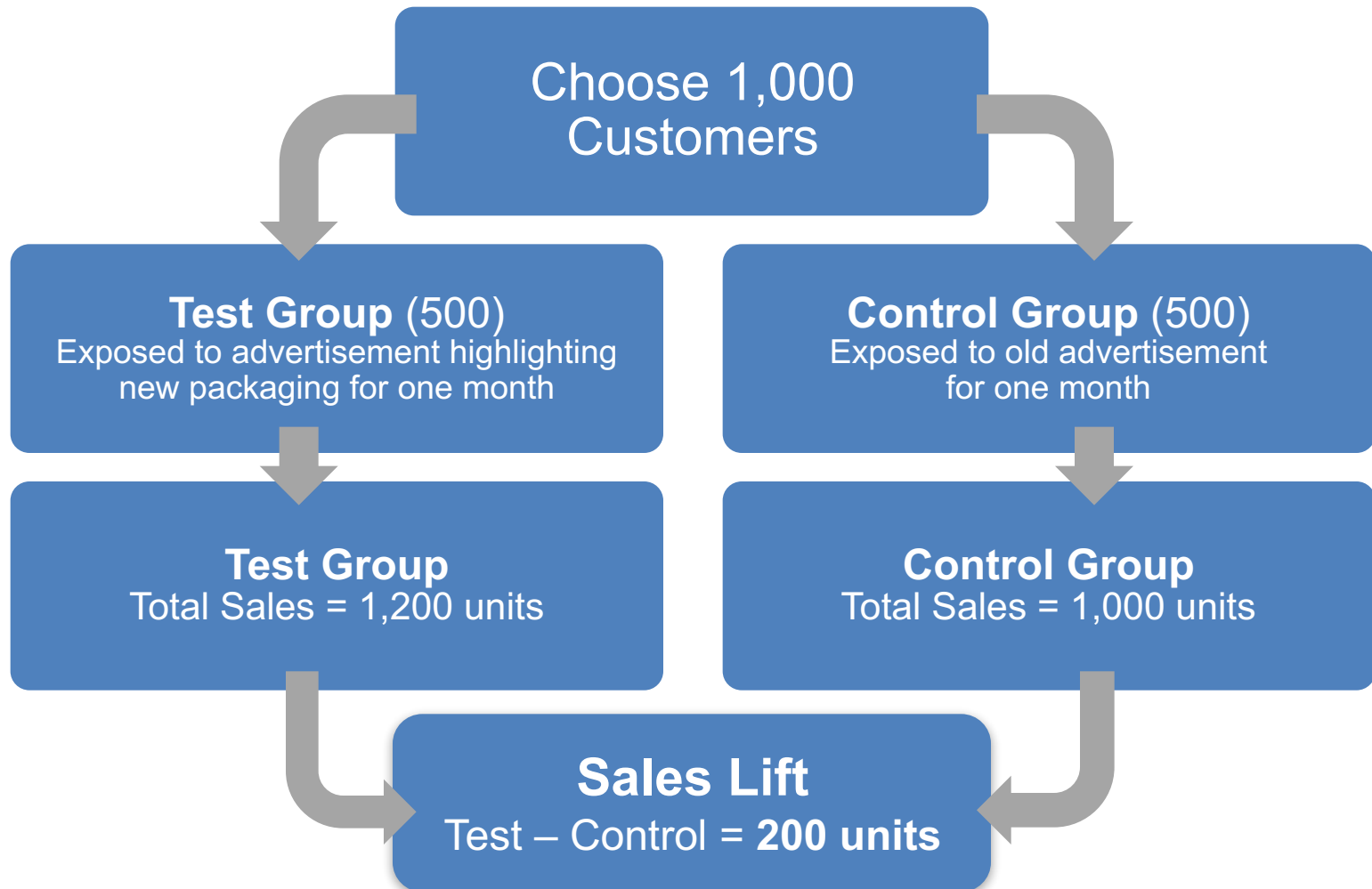
Experiments: The Holy Grail!

One or more independent variable(s) [**Advertising $**] are manipulated to observe changes in the dependent variable [**Sales or Brand awareness**]

A Basic Experiment

How to assign customers to experiment and control group?

Advanced Experiment Designs

A Basic Experiment

Randomization: can *match* test and control groups on all dimensions simultaneously, given a sufficient sample size?

Choose 1,000 Customers

Test Group (500)
Exposed to advertisement highlighting new packaging for one month

Control Group (500)
Exposed to old advertisement for one month

Test Group
Total Sales = 1,200 units

Control Group
Total Sales = 1,000 units

Sales Lift
Test – Control = **200 units**
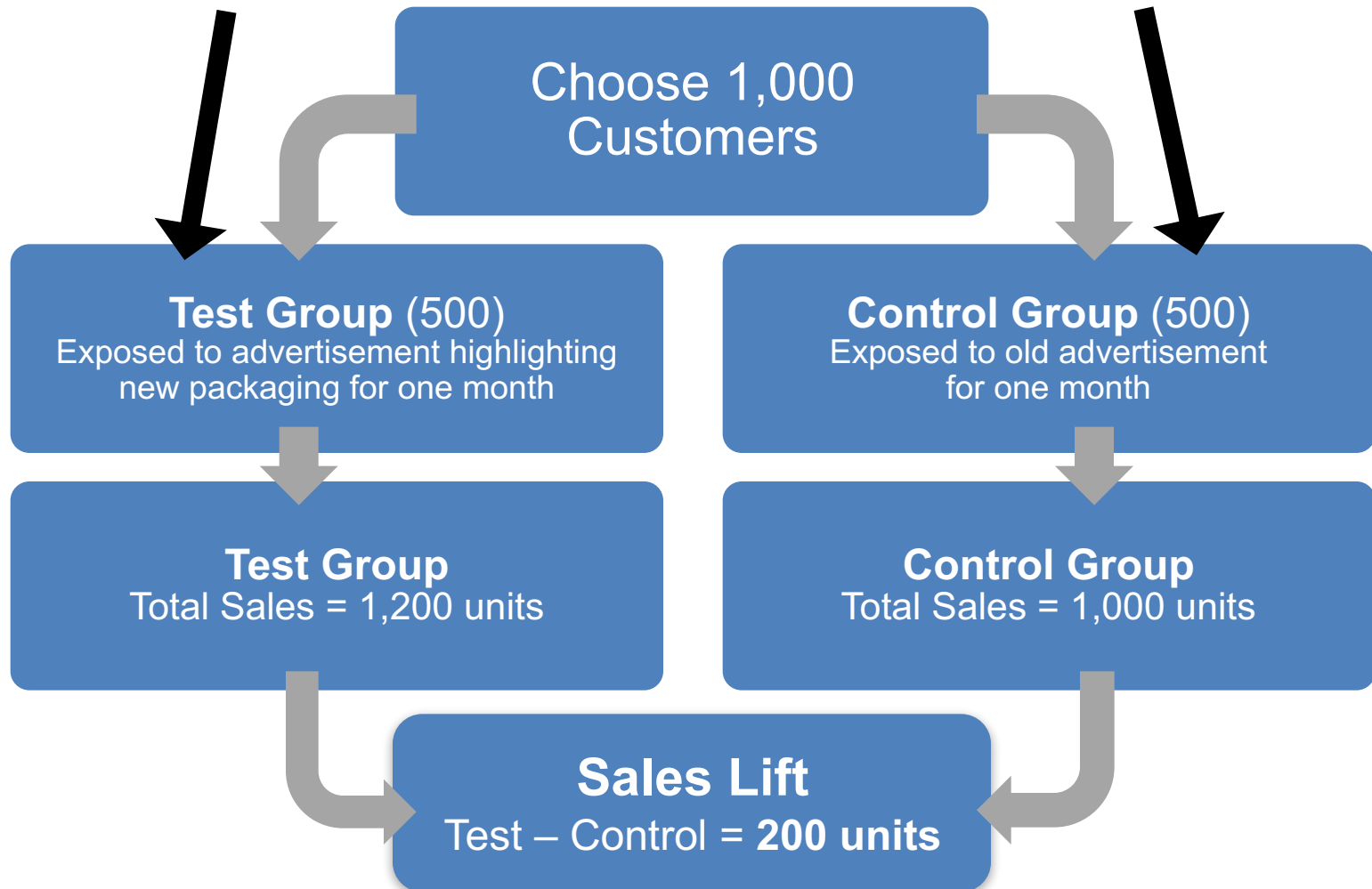
A Basic Experiment

Match: experiment and control groups on known attributes (e.g., demographics). When would this be necessary?

Choose 1,000 Customers

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Exposed to advertisement highlighting new packaging for one month

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Exposed to old advertisement for one month

Test Group
Total Sales = 1,200 units

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Sales Lift
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Before–After Design

Choose 1,000 Customers

Test Group (500)
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Total Sales = 1,000 units

Sales Lift
Test – Control = **200 units**

Before–After Design

Web Experiments: Full Factorial Design

Price		
$1.59	$1.89*	$2.15

* Current conditions, so can be considered controls

Web Experiments: Full Factorial Design

Advertisement Copy	Price		
	$1.59	$1.89*	$2.15
"Lasts Longer"			
"Tastes Better"			
"Good for You"*			

* Current conditions, so can be considered controls

Web Experiments: Full Factorial Design

Advertisement Copy	Price		
	$1.59	**$1.89***	**$2.15**
"Lasts Longer"		$1,112	
"Tastes Better"		$1,030	
"Good for You"*		$820	

* Current conditions, so can be considered controls

Web Experiments: Full Factorial Design

Advertisement Copy	Price		
	$1.59	**$1.89***	**$2.15**
"Lasts Longer"		$1,112	
"Tastes Better"		$1,030	
"Good for You"*	$930	$820	$770

* Current conditions, so can be considered controls

Web Experiments: Full Factorial Design

Advertisement Copy	Price		
	$1.59	**$1.89***	**$2.15**
"Lasts Longer"	$1,315	$1,112	$1,206
"Tastes Better"	$957	$1,030	$1,500
"Good for You"*	$930	$820	$770

* Current conditions, so can be considered controls

Ohio Art Company

Part 1

Photo Credit: Etcha (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0) or GFDL (http://www.gnu.org/copyleft/fdl.html)], via Wikimedia Commons

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Sample Retailer Weekly Unit Sales
(Etch A Sketch)

Test City

Cinncinatti

Test period
During Nov-Dec
Ads ran during
daytime
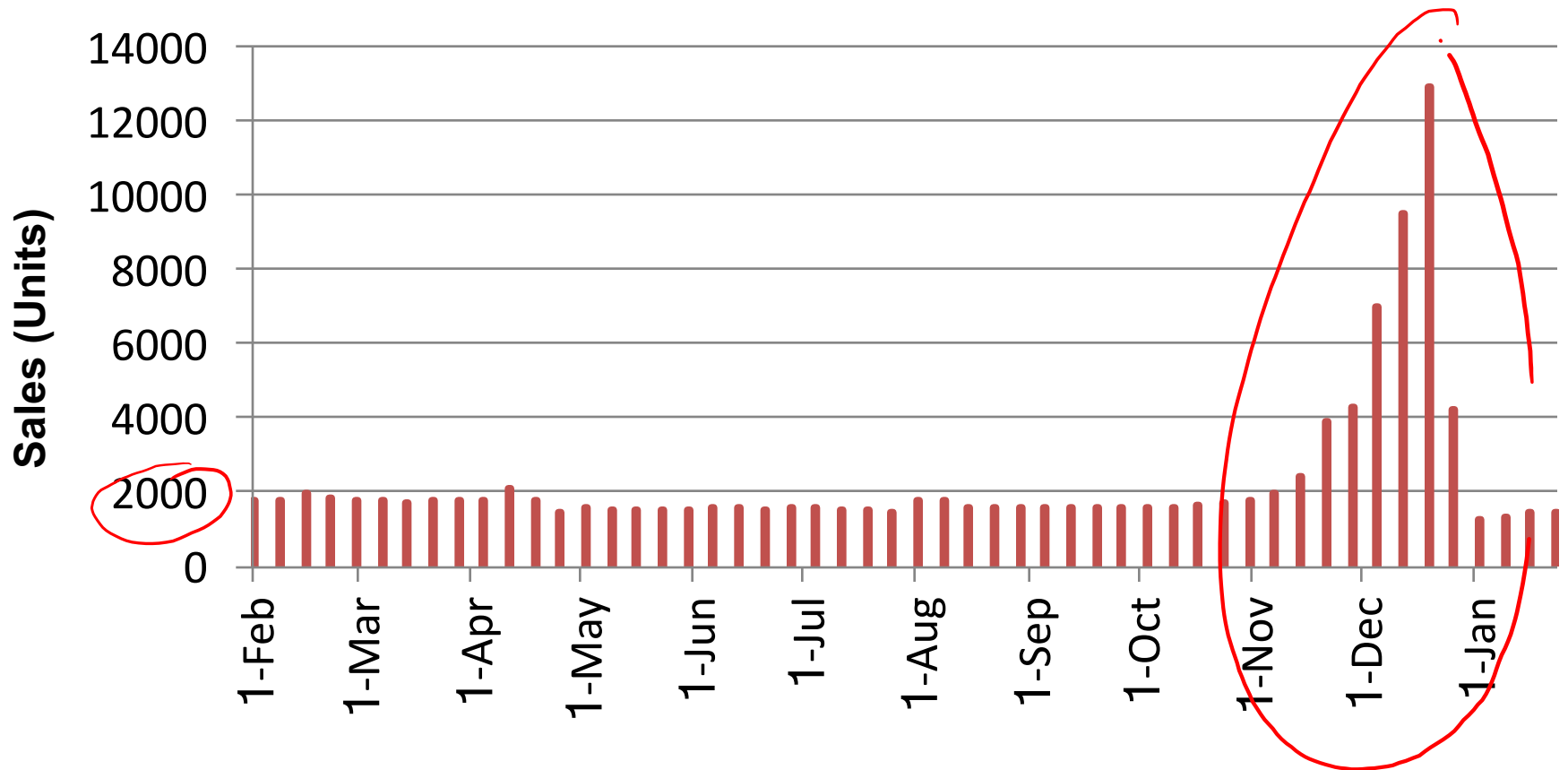
Control Cities

Cleveland

Charleston

Indianapolis

Pittsburg

Ohio Art Company

Part 2

Etch A Sketch Test Results

Number of Weeks	Etch A Sketch		
	Test Product		
	Cincinnati Units	Control* Units	Cincinnati Shares (%)

* Control cities included (a) Charleston, South Carolina; (b) Cleveland, Ohio; (c) Indianapolis, Indiana; and (d) Pittsburgh, Pennsylvania.

Etch A Sketch Test Results

	Number of Weeks	Etch A Sketch Test Product		
		Cincinnati Units	Control* Units	Cincinnati Shares (%)
Pretest 5 Dec 2005–26 Nov 2006	12	162	1526	9.6

* Control cities included (a) Charleston, South Carolina; (b) Cleveland, Ohio; (c) Indianapolis, Indiana; and (d) Pittsburgh, Pennsylvania.

Etch A Sketch Test Results

| | | Etch A Sketch | | |
| | | Test Product | | |
	Number of Weeks	Cincinnati Units	Control* Units	Cincinnati Shares (%)
Pretest **5 Dec 2005–26 Nov 2006**	12	162	1526	9.6
Test **27 Nov 2006–16 Dec 2006**	3	240	1598	13.1

* Control cities included (a) Charleston, South Carolina; (b) Cleveland, Ohio; (c) Indianapolis, Indiana; and (d) Pittsburgh, Pennsylvania.

Etch A Sketch Test Results

| | Etch A Sketch | | |
| | Test Product | | |
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Pretest 5 Dec 2005–26 Nov 2006	12	162	1526	9.6
Test 27 Nov 2006–16 Dec 2006	3	240	1598	13.1
Lift				136.1

* Control cities included (a) Charleston, South Carolina; (b) Cleveland, Ohio; (c) Indianapolis, Indiana; and (d) Pittsburgh, Pennsylvania.

Etch A Sketch Test Results

| | Number of Weeks | Etch A Sketch | | | Doodle | | |
| | | Test Product | | | Control Product | | |
		Cincinnati Units	Control* Units	Cincinnati Shares (%)	Cincinnati Units	Control Units	Cincinnati Share
Pretest 5 Dec 2005–26 Nov 2006	12	162	1526	9.6	1517	6742	18.4
Test 27 Nov 2006–16 Dec 2006	3	240	1598	13.1	816	3780	17.7
Lift				136.1			96.7

* Control cities included (a) Charleston, South Carolina; (b) Cleveland, Ohio; (c) Indianapolis, Indiana; and (d) Pittsburgh, Pennsylvania.

Etch A Sketch Test Results

| | Number of Weeks | Etch A Sketch | | | Doodle | | |
| | | Test Product | | | Control Product | | |
		Cincinnati Units	Control* Units	Cincinnati Shares (%)	Cincinnati Units	Control Units	Cincinnati Share
Pretest 5 Dec 2005–26 Nov 2006	12	162	1526	9.6	1517	6742	18.4
Test 27 Nov 2006–16 Dec 2006	3	240	1598	13.1	816	3780	17.7
Lift				136.1			96.7
Net Lift				39.4%			

* Control cities included (a) Charleston, South Carolina; (b) Cleveland, Ohio; (c) Indianapolis, Indiana; and (d) Pittsburgh, Pennsylvania.

Etch A Sketch

Campaign Finance

Etch A Sketch Test Results

Retail Price	10
Retail Margin	36%
Manufacturer Selling Price	$6.40
Manufacturer Contribution Margin %	58%
Manufacturer Contribution Margin $	**$3.71**

Etch A Sketch Test Results

Retail Price	10
Retail Margin	36%
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Manufacturer Contribution Margin $	**$3.71**

National Budget	5,000,000
Units Break Even	1,346,983
Base Units	3,100,000
Base Units Test Period	1,085,000

Etch A Sketch Test Results

Retail Price	10
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Manufacturer Contribution Margin $	**$3.71**

National Budget	5,000,000
Units Break Even	1,346,983
Base Units	3,100,000
Base Units Test Period	1,085,000

Break-Even Lift % of Base	**224%**