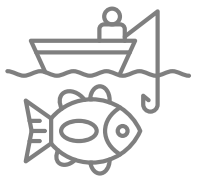

Hypothesis testing (A/B Testing)

Boating and fishing supplies retailer

Analyzed the impact of direct mail campaign on response rate for various segments. Used hypothesis testing to test the response rate for

- Customers who were shared mailer
- Customers who were not shared mailer
- Identified the target profile based on test results to maximize the response rate

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Boating and fishing supplies retailer needs hypothesis testing (A/B testing)

HYPOTHESIS TESTING (A/B TESTING)

Picture this…

You're looking to identify customer segments where the campaign has been effective and the types of mailers that are impactful by leveraging statistical A/B testing evaluation techniques. You have been running a monthly direct mailer campaign for multiple years but lacked visibility into the impact of the program across customer segments.

You turn to Accordion.

We partner with your team to analyze the impact of direct mail campaign on response rate for various segments. Used hypothesis testing to test the response rate for

- Customers who were shared mailer
- Customers who were not shared mailer

Identifying the target profile based on test results to maximize the response rate, including:

1) Analyzing the performance of the direct mailer program for each customer segment (such as geography, age, channel etc.) by evaluating the statistical lift of the test group beyond the control group using hypothesis testing techniques
2) Enabling the marketing team to identify the mailer list for upcoming months based on the customers segments where Direct mailer campaigns had a significant impact on response rates in the past
3) Comparing each segment for incrementality based on statistical significance observed using 1 tailed t-test

Your value is enhanced.

- Recommended continued budget allocation to a targeted mailer program given the revenue impact and estimated ROI
- Identified the target profile for the direct mailer program having highest impact on response rate (100+ bps)
- Identified breakeven points for future mailer campaigns based on expected revenue impact of incremental response rates from customers (~0.3%)
- Identified the flyer characteristics and time period of deployment that has the highest probability of impact

KEY RESULT

- Highest impact on response rate (100+ bps)
- Impact of incremental response rates from customers (~0.3%)

VALUE LEVERS PULLED

- Hypothesis testing
- A/B testing

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Hypothesis testing for boating and fishing supplies retailer

Situation

- Client had been running a monthly Direct Mailer campaign for multiple years but lacked visibility into the impact of the program across customer segments
- Partnered with the client to identify customer segments where the campaign has been effective and the types of mailers that are impactful by leveraging statistical A/B testing evaluation techniques

Accordion Value Add

- Analyzed the performance of the direct mailer program for each customer segment (such as geography, age, channel etc.) by evaluating the statistical lift of the test group beyond the control group using hypothesis testing techniques
- Enabled the marketing team to identify the mailer list for upcoming months based on the customers segments where Direct mailer campaigns had a significant impact on response rates in the past
- Compared each segment for incrementality based on statistical significance observed using 1 tailed t-test

Impact

- Recommended continued budget allocation to a targeted mailer program given the revenue impact and estimated ROI
- Identified the target profile for the direct mailer program having highest impact on response rate (100+ bps)
- Identified breakeven points for future mailer campaigns based on expected revenue impact of incremental response rates from customers (~0.3%)
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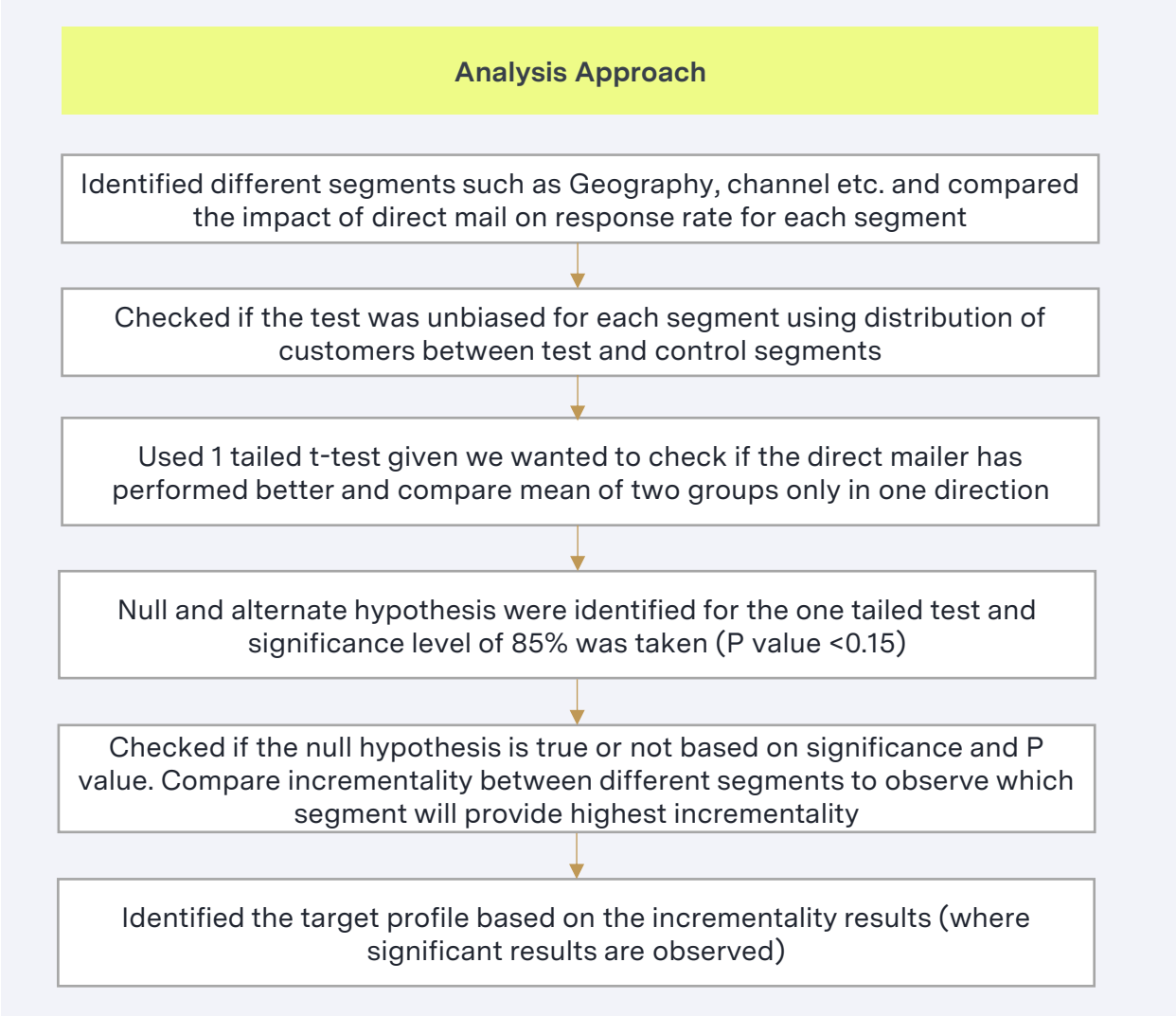
Approach & Methodology



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Significance value and test results for hypothesis testing

Null Hypothesis: Response rate for Direct Mailer is less than or equal to response rate for Control
Alternate hypothesis: Response rate for Direct Mailer is greater than response rate for Control

p-Value results based on one tailed T test and incrementality

Response rate and revenue for Mailer (Test) and Control group for a segment

				Response Rate Results		Mailer (Test Group)					Control Group				
Flyer	Start Date	End Date	Region	P-value	Incrementality (bps	#Customers	#Response	Response Rate (%)	Revenue	Revenue/Response	#Customers	#Response	Response Rate (%)	Revenue	Revenue/Response
Flyer 1	Date 1	End Date 1	Region 1	0.06	-150	10,000	830	8.3%	$100,000	$120.48	1000	98	9.8%	$100,000	$1,020.41
			Region 2	0.53	20	10,000	890	8.9%	$100,200	$112.58	1000	87	8.7%	$100,200	$1,151.72
			Region 3	0.24	50	10,000	970	9.7%	$100,500	$103.61	1000	92	9.2%	$100,500	$1,092.39
			Region 4	0.32	30	10,000	960	9.6%	$100,040	$104.21	1000	93	9.3%	$100,040	$1,075.70
			Region 5	0.39	40	10,000	930	9.3%	$100,380	$107.94	1000	89	8.9%	$100,380	$1,127.87
			Region 6	0.06	150	10,000	970	9.7%	$101,180	$104.31	1000	82	8.2%	$101,180	$1,233.90

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Results summary at a flyer and segment level

Summary of results for each segment across flyers where results were statistically significant.

	Rank Bucket			Mailer			Control			
Region	Top 2	Middle 2	Bottom 2	#Customers	#Responses	Response Rate (%)	#Customers	#Responses	Response Rate (%)	Incrementality (bps)
Region 1	2	2	0	10,000	980	9.8%	1000	90	9.0%	80
Region 2	4	2	3	10,000	820	8.2%	1000	97	9.7%	-150
Region 3	3	4	3	10,000	920	9.2%	1000	93	9.3%	-10
Region 4	4	4	2	10,000	820	8.2%	1000	96	9.6%	-140
Region 5	1	4	3	10,000	830	8.3%	1000	93	9.3%	-100
Region 6	3	1	1	10,000	830	8.3%	1000	83	8.3%	0

Rank bucket shows the count of flyers where the region was in top 2, bottom 2 or middle 2 based on the response rate.

Region 5 performed high (Rank 1 or 2) in only 1 out of 8 flyers.
Therefore, the campaign has neutral or lower impact in Region 5 as compared to other regions with average incrementality of -50 bps

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Learnings

1) Expanded the knowledge in Hypothesis testing using one tailed and two tailed test.
2) Explored which analysis to be used to compare incrementality between test and control across two different segments.
3) P value and Significance calculation using Excel and the in-house tool. Fixed a few errors in the tool as well.
4) Selection of relevant hypothesis test to be used based on data and business context and creating null and alternate hypothesis.

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