

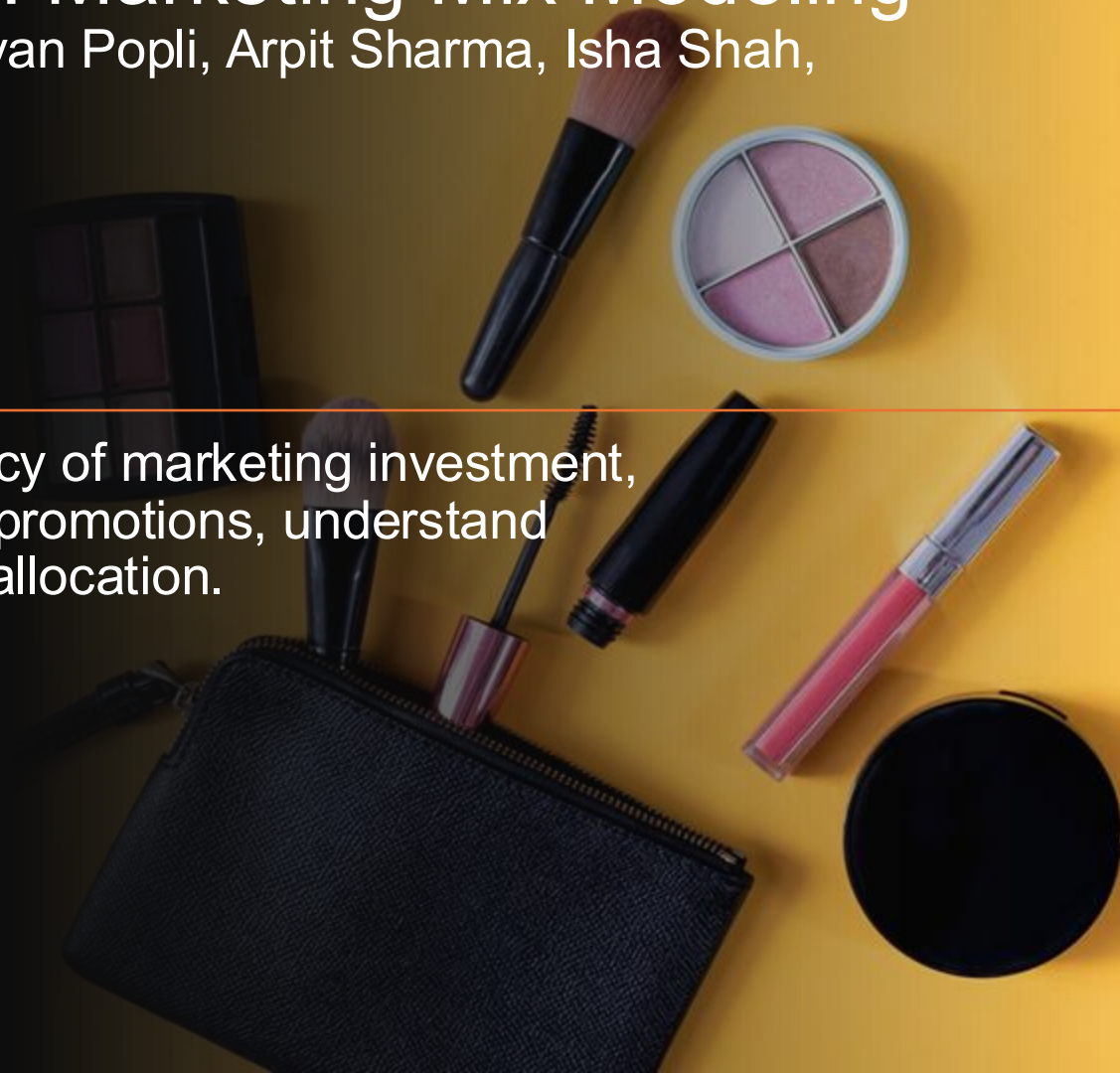
# Hope Street Cosmetics: Marketing Mix Modeling

Report Prepared by Group 6 (Addhyan Popli, Arpit Sharma, Isha Shah,  
Tavishi Chaturvedi, Tooba Edhi)

Date: April 22, 2025

---

**Client Objective:** Maximize efficiency of marketing investment, assess ROI of media channels and promotions, understand COVID impact, and guide strategic allocation.



# Scope

---

## Geography



**Total US Business**

## Modeled KPI



**1 Model – Total Sales across all channels**

## Time Period



**2 Calendar Years: January 2019 – December 2020**  
Weekly granularity (01/07/2019 – 12/28/2020),  
Monday week start

# APPROACH

## Objective:

- Evaluate media and promotion effectiveness
- Measure ROI and contribution to sales
- Guide future media budget allocation

## Model Setup:

- 1 model: Total Sales (US, 2019–2020, weekly)

## Approach:

- Build MMM using weekly sales and spend
- Break sales into Macro, Promotion, Media
- Calculate ROI and contribution per channel

## Tools:

- Python model + Excel analysis + PPT outputs

## Key Outputs:

- Layer Chart, Sales Decomposition, Gap Analysis, ROI Scorecard

## Outcome:

- Recommend more spend on high-ROI channels (Search, Social)
- Reduce or restructure low-ROI media (TV, Print, OOH)



# Executive Summary

	Insight	Implications/Recommendation
<b>Media Performance</b>	Digital channels (Search, Social, Display) consistently delivered the highest ROI, even under pandemic disruption. TV and Print underperformed.	Shift spend toward high-ROI digital media. Limit standalone TV; explore only co-op campaigns. Scale Display where performance is improving.
<b>Promo Performance</b>	Promo ROI dropped from 9% to 5% in 2020. Overuse diluted impact and did not contribute incremental sales during low-traffic periods.	Reduce frequency of promotions. Focus only on key events (e.g., product launches, holidays). Re-evaluate mechanics (GWP > blanket discounts).
<b>Covid Impact</b>	COVID-19 caused a \$57.6M drop in sales; macroeconomic conditions accounted for an additional \$151M decline. Digital remained resilient.	Maintain a flexible, digital-first approach. Use agile planning to adapt quickly to market volatility. Invest in recession-resilient media.
<b>Other Findings</b>	Co-op media (especially Print) had surprisingly high ROI. Some sales surges were underpredicted, indicating impact from untracked channels.	Expand co-op media with key retailers. Improve tracking for PR, influencer, and organic buzz to capture full marketing impact and attribution.

# Situation & Background

High-end cosmetics and skincare company Hope Street Cosmetics sells its products worldwide via several outlets, including department stores, Sephora and Ulta stores, brand-owned stores, and online. The marketing expenditure has grown dramatically over past years, but the matching rise in sales has not been the same

## Key strategic concerns regarding the brand's recent performance and marketing efficiency.

- There was a strong need to evaluate whether the current marketing investments are being utilized effectively and if resources are being allocated to the most impactful channels.
- Understanding which specific media platforms deliver the highest return on investment was a priority, especially given the gap between rising marketing spend and modest sales growth.
- Additionally, the CMO was interested in uncovering why certain marketing efforts were resulting in minimal sales impact, signaling a possible misalignment in execution or messaging.
- Another critical focus was assessing the effects of the COVID-19 pandemic on overall business performance, including shifts in consumer behavior and media responsiveness.

Ekimetrics was contracted to undertake a two-year Marketing Mix Modeling (MMM) project spanning 2019–2020 in order to address these questions Using weekly data to assign contribution and return on investment by strategy, this study breaks out total sales into components motivated by paid media, promotions, and natural (baseline) variables.

### Strategic Focus:

1. Understand which marketing tactics are driving real results.
2. Measure Promotions more rigorously, especially since the CMO suspects they are a big business contributor.
3. Quantify the impact of COVID-19 on sales, media performance, and consumer behavior shifts.

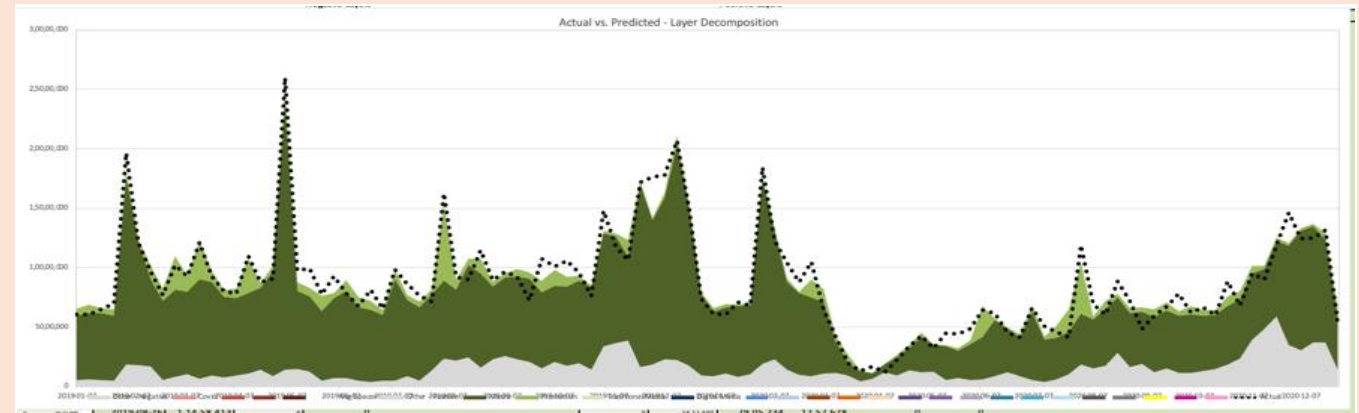
# Layer Chart Analysis: Actual vs Predicted Sales

## About the Chart:

Visualizing how different marketing layers contributed to weekly sales over time.

The layer chart breaks down weekly sales into components showing how much each marketing or external factor contributed to total sales. Here's what's represented:

- **Black dotted line:** Actual recorded weekly sales revenue
- **Stacked colored layers:** Predicted contribution from marketing channels:
  - Traditional Media
  - Digital Media
  - Promotions
- **Gray area at the bottom:** Negative impact from COVID-19
- **Baseline (not explicitly colored):** Captured within the model's fit (the area between bottom and actual line), reflecting sales that would have occurred without marketing or pandemic effects
- The purpose is to visualize both magnitude and timing of each driver's impact and assess how closely the model predicts actual outcomes.



## Key Findings:

- **Strong Model Fit-** The predicted sales (stacked layers) closely match actual sales (black dotted line) across most weeks. Indicates the model captures key drivers accurately.
- **Promotions Drive Sales Spikes-** Sharp, narrow peaks in the promotion layer align with launch periods and seasonal offers. Confirms promotions are effective for short-term lifts but not sustained growth.
- **Digital Media as a Constant Contributor-** Digital Media appears every week, showing consistent impact from always-on paid campaigns. Maintains brand visibility and conversion during both high and low demand periods.
- **Traditional Media is Episodic and Campaign-Based-** Seen as blocky bursts tied to Q4 holidays or launches. Impactful in short bursts, but not sustainable week-over-week.
- **COVID-19 Created a Clear Negative Drag-** The gray “negative layer” appears in spring 2020, peaking in March–May. Reflects pandemic-induced drop in demand despite ongoing marketing.
- **Holiday Synergy is Strong-** Q4 sales spikes show aligned impact from Promotions, Digital, and Traditional Media. Demonstrates effectiveness of coordinated, cross-channel campaigns.
- **Underprediction Hints at Missing Variables-** Weeks where actual sales exceed predictions suggest untracked drivers (e.g., PR, influencers, earned media).

# Annual Sales Decomposition (Macro vs. Promotion vs. Media)

## Annual Sales Decomposition

- Compares total sales in two time periods.
- Identifies which factors increased or decreased sales.
- Breaks sales into: Macro (natural demand), Promotion (discounts, samples), Media (ads).

## Principal Learnings

- **Macro:** Dropped in value but increased in share (78% - 80%) Indicates more reliance on natural demand in 2020.
- **Promotion:** Share decreased sharply (9% - 5%) Suggests fewer or less effective campaigns.
- **Media:** Slight increase in share (13% - 14%) Indicates better targeting or stronger ad creatives despite market uncertainty.

## Strategic Guidelines:

- Rethink promotional approach Focus on fewer but more impactful events.
- Continue investing in **high-performing digital media** like Facebook and YouTube.
- Maintain media spending as it remains **effective even during external disruptions.**



Group	2019		2020	
	Contribution	% Contribution	Contribution	% Contribution
Macro	\$420.6 M	78%	\$252.4 M	80%
Promotion	\$48.6 M	9%	\$29.1 M	5%
Media	\$70.4 M	13%	\$78.0 M	14%

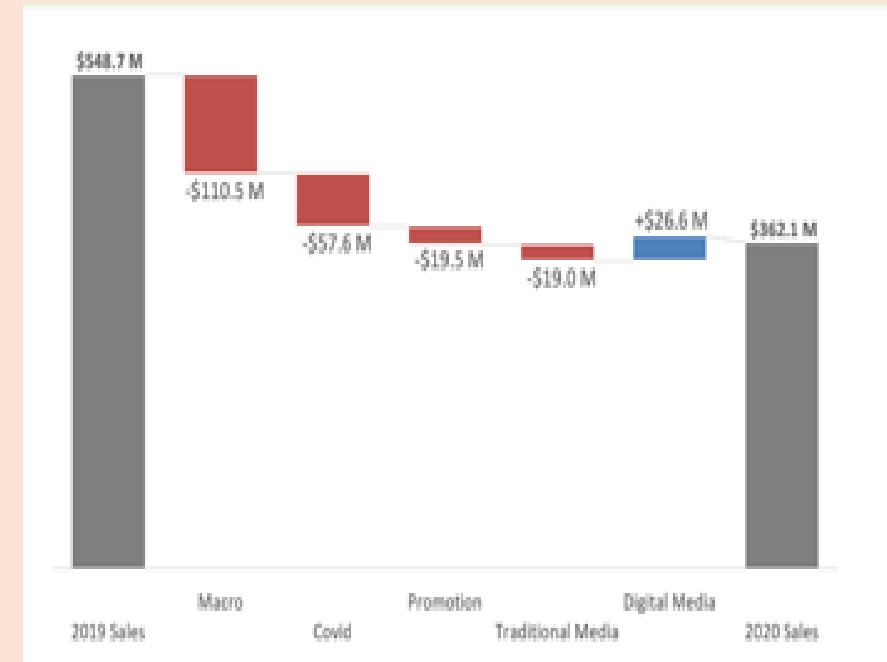
# Gap Analysis: Drivers of Sales Decline (2019 vs 2020)

Table quantifies the change in contribution and spend for each key driver, helping us pinpoint which areas saw the largest drop or growth. Chart visually represents how each component impacted the overall sales decline: starting from \$548.7M in 2019 and ending at \$362.1M in 2020. This analysis helps us isolate the underlying drivers behind the \$186.6M drop and understand how marketing and macroeconomic forces shaped performance.

## Key Insights:

- Macro Decline Change: -\$110.5M**  
 The biggest contributor to the fall was reduced organic demand. This likely reflects lower foot traffic, less spontaneous purchasing and overall market contraction due to the pandemic.
- COVID-Specific Impact: -\$57.6M**  
 COVID didn't just change behavior, it directly caused a measurable dip in sales, independent of other variables.
- Promotions Underperformed: -\$19.5M**  
 Promotions, which previously drove considerable revenue, failed to deliver impact in 2020. This suggests either ineffective execution or misalignment with consumer needs during uncertain times.
- Traditional Media Weakened: -\$19.0M**  
 Even with a small cut in spend, contribution dropped significantly, indicating declining ROI from channels like TV and Print.
- Digital Media Stood Out: +\$26.6M**  
 Digital channels like Search and Social outperformed despite reduced budgets, proving their efficiency and adaptability during volatile periods.

Gap Bar	Change in Contribution	Change in Spend
2019 Sales	\$548.7 M	-
Macro	-\$110.5 M	-
Covid	-\$57.6 M	-
Promotion	-\$19.5 M	-
Traditional Media	-\$19.0 M	-\$2.8 M
Digital Media	+\$26.6 M	+\$4.1 M
2020 Sales	\$362.1 M	-



# ROI Scorecard – COVID Period (Mar–Jul 2020)

**About the Analysis** - This ROI Scorecard evaluates how marketing channels performed during the uncertainty of early COVID (Mar–Jul 2020). It highlights both efficiency and resilience in driving sales when consumer behavior was highly disrupted.

## **Key Findings & Suggested Actions:**

- **Social Media was the highest ROI performer (14.8)**- Double down on Social in times of uncertainty it offers high engagement and return with flexibility.
- **Search showed strong intent-driven conversion (ROI 8.1)**- Prioritize Search as a core always-on channel for quick, measurable ROI during volatile periods.
- **TV remained relevant (ROI 4.5), proving effective for reach**- Use TV selectively for brand continuity, especially when consumers are home and media consumption rises.
- **Print underperformed (ROI 2.7), likely due to reduce in-store exposure**- Reallocate Print budgets toward more trackable and responsive digital formats during store-limited periods.
- **Online Video delivered moderate returns (ROI 3.9)**- Use Online Video for upper-funnel storytelling, but pair it with lower-funnel drivers like Search or Email.
- **Display was the least efficient (ROI 2.8)**- Restrict Display to support roles (retargeting or frequency), not as a primary sales-driving channel.

Group	Covid (3/16/2020 - 7/27/2020)		
	Spend	Contribution	ROI
TV	\$4.2 M	\$18.8 M	4.5
Print	\$4.1 M	\$11.2 M	2.7
Outdoor	-	-	-
Search	\$1.1 M	\$9.1 M	8.1
Social	\$1.5 M	\$22.4 M	14.8
Online Video	\$1.5 M	\$6.0 M	3.9
Display	\$1.0 M	\$2.9 M	2.8



# ROI Comparison: Pre vs. Post COVID

Group	Pre-Covid (1/7/2019 - 3/9/2020)			Post Covid (8/3/2020 - 12/28/2020)		
	Spend	Contribution	ROI	Spend	Contribution	ROI
TV	\$4.5 M	\$20.4 M	4.5	\$2.5 M	\$3.8 M	1.5
Print	\$4.7 M	\$12.9 M	2.7	\$0.6 M	\$1.4 M	2.4
Outdoor	-	-	-	\$0.1 M	-	-
Search	\$1.3 M	\$11.1 M	8.3	\$1.4 M	\$15.1 M	10.5
Social	\$1.9 M	\$27.4 M	14.4	\$1.4 M	\$20.5 M	14.6
Online Video	\$1.9 M	\$7.1 M	3.8	\$2.9 M	\$6.1 M	2.1
Display	\$1.1 M	\$3.0 M	2.9	\$1.0 M	\$4.4 M	4.2



The table splits the timeline into: **Pre-COVID and Post-COVID**. It includes spend, contribution to sales and calculated ROI across key marketing channels such as TV, Print, Search, Social, Display, and more. This visual helps us evaluate how media performance changed due to pandemic-related shifts in consumer behavior and media consumption.

## Key Insights

- **TV collapsed** (ROI dropped from 4.5 to 1.5): A steep decline in ROI shows that TV became far less effective post-COVID, likely due to changes in viewing habits and saturation of messaging.
- **Print also declined** (2.7 to 2.4 ROI): While the drop is smaller, print underperformed with higher spend but lower proportional impact, signaling reduced relevance during a digital-first era.
- **Search surged** (ROI from 8.3 to 10.5): Consumers turned to search more during uncertain times, making it a highly efficient, intent-driven channel.
- **Social skyrocketed** (ROI from 14.4 to 14.6): Already high-performing, social media maintained its dominance. This underscores the importance of consistent engagement and community building.
- **Display improved significantly** (ROI from 2.9 to 4.2): Likely due to less competition for ad space and better retargeting : display ads proved increasingly effective post-COVID.

# ROI Scorecard - 2019 vs. 2020

## Definition:

- Compares marketing channels based on:
- Spend: How much money was spent
- Contribution: Sales generated
- ROI: Return on Investment (Sales / Spend)

## Key Insights :

- TV: ROI dropped from 4.5 in 2019 to 1.9 in 2020 - Less efficient in 2020
- Print: ROI decreased slightly from 2.7 to 2.3 - Still average performance
- Outdoor (OOH): No ROI in 2020 - Not effective during COVID
- Search: ROI increased from 8.1 to 10.2 - Very efficient and improving
- Social (Facebook, Instagram): High ROI in both years (14.8 to 15.0) - Strongest channel
- Online Video (YouTube): ROI decreased from 3.9 to 2.4 despite more spend - Needs review
- Display: ROI improved from 2.8 to 4.5 - Became more effective in 2020

## Strategic Recommendations:

- Increase investment in Social and Search - High ROI, strong results
- Reevaluate TV and Online Video spending - Reduced efficiency
- Avoid or reduce spend on Outdoor media - Low impact during disruptions
- Continue monitoring Display ads - Showing improvement

Group	2019			2020		
	Spend	Contribution	ROI	Spend	Contribution	ROI
TV	\$4.2 M	\$18.8 M	4.5	\$3.3 M	\$6.3 M	1.9
Print	\$4.1 M	\$11.2 M	2.7	\$2.1 M	\$4.7 M	2.3
Outdoor	-	-	-	\$0.1 M	-	-
Search	\$1.1 M	\$9.1 M	8.1	\$1.9 M	\$19.8 M	10.2
Social	\$1.5 M	\$22.4 M	14.8	\$2.2 M	\$32.2 M	15.0
Online Video	\$1.5 M	\$6.0 M	3.9	\$3.9 M	\$9.3 M	2.4
Display	\$1.0 M	\$2.9 M	2.8	\$1.3 M	\$5.7 M	4.5



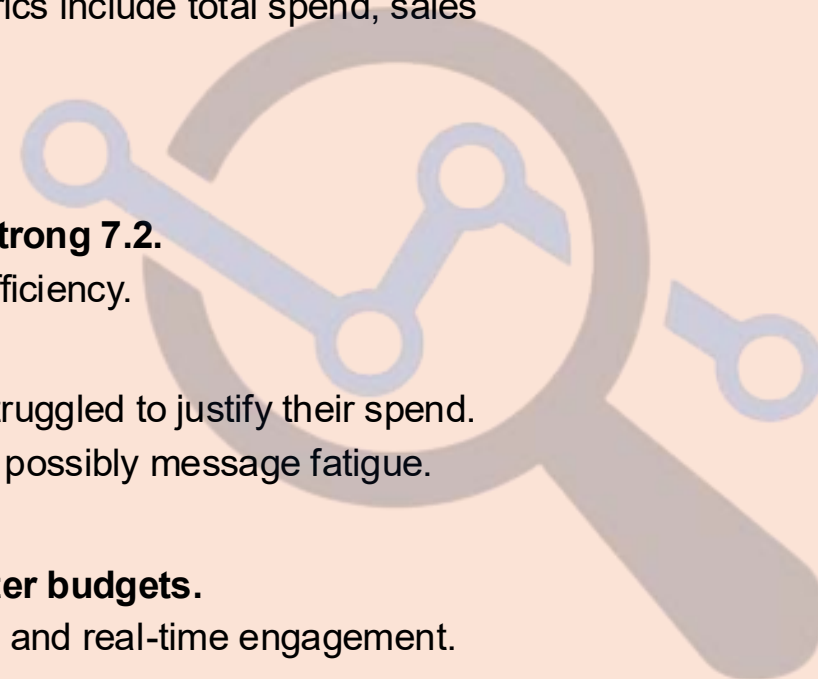
# Deep Dive 1: Traditional vs Digital Media ROI

Group	2019			2020		
	Spend	Contribution	ROI	Spend	Contribution	ROI
Traditional Media	\$8.2 M	\$30.0 M	3.6	\$5.5 M	\$11.0 M	2.0
Digital Media	\$5.2 M	\$40.4 M	7.8	\$9.3 M	\$67.0 M	7.2

This table compares the marketing **ROI of Traditional vs. Digital Media across 2019 and 2020**. It helps us evaluate which type of media yielded better returns, and how the shift in media performance should guide future investment. Traditional Media includes TV, Print, Outdoor while Digital Media includes Search, Social, Online Video, and Display Metrics include total spend, sales contribution, and calculated ROI for each media type.

## Key Insights

- Digital Media consistently outperformed Traditional Media
  - **In 2019, traditional media had an ROI of 3.6 while digital media delivered a strong 7.2.**
  - In 2020, digital ROI remained high despite pandemic disruptions, reinforcing its efficiency.
- Traditional Media ROI dropped significantly
  - As consumer attention shifted further online during COVID, traditional channels struggled to justify their spend.
  - ROI declined due to decreased reach, changing content consumption habits, and possibly message fatigue.
- Digital's resilience proves strategic value
  - **Digital media not only maintained performance but scaled better under tighter budgets.**
  - This includes channels like Search and Social, which thrive on precision targeting and real-time engagement.



# Deep Dive 2: Coop vs. Pure Media Efficiency (TV and Print)

Group	2019			2020		
	Spend	Contribution	ROI	Spend	Contribution	ROI
TV - Pure	-	-	-	\$1.4 M	\$1.5 M	1.1
TV - Coop	\$4.5 M	\$20.4 M	4.5	\$1.2 M	\$2.3 M	2.0
Print - Pure	\$3.8 M	\$4.9 M	1.3	\$0.6 M	\$1.1 M	2.0
Print - Coop	\$0.9 M	\$8.0 M	8.7	\$39.2 K	\$0.3 M	8.7

## Key Insights & Recommended Actions:

- Coop TV outperformed Pure TV in both years**  
 In 2019, Coop TV delivered an ROI of 4.5, with no Pure TV spend. In 2020, Coop TV (ROI 2.0) still outperformed Pure TV (ROI 1.1). Prioritize Coop-funded TV when possible — it brings better returns, likely due to cost-sharing and in-store alignment.
- Print – Coop ROI was exceptionally high and stable (8.7 in both years)**  
 Despite minimal spend (\$0.9M in 2019 and only \$39.2K in 2020), Print Coop consistently generated strong ROI. Even small Coop Print investments can yield high returns — continue leveraging this low-cost, high-efficiency format in targeted campaigns.
- Print – Pure underperformed in 2019 but improved in 2020-** ROI improved from 1.3 in 2019 to 2.0 in 2020, but still far below Coop Print. Limit brand-only Print spend and explore more joint-retail initiatives to replicate Coop performance.
- TV effectiveness declined overall in 2020**  
 Both TV Coop and Pure saw lower ROI in 2020 compared to 2019 — possibly due to changing consumer media habits and store access. Reassess TV's role post-COVID and ensure it's paired with high-conversion channels like digital or promotions.

# Strategic Recommendations

**Double Down on Search and Social** - Search and Social media consistently delivered the highest Return on Investment (ROI), even under volatile market conditions like the COVID-19 pandemic. Their performance remained strong across both 2019 and 2020, demonstrating resilience and adaptability when consumer behavior rapidly shifted.

- Allocate a larger percentage of your media budget to these platforms. Build always-on campaigns for Search, supported by high-performing creatives. Consider retargeting users who engage with your website or products.

**Limit or Reformat TV, Focus on Co-op Campaigns** - TV, once a powerhouse channel, saw a significant drop in efficiency likely due to shifting media consumption patterns (e.g., streaming over traditional TV), rising costs, and content saturation. Your ROI data revealed that TV performance was notably better when executed as co-op campaigns with retail partners (e.g., Sephora, Ulta). Standalone TV campaigns are costly and lack precise tracking. Co-op TV leverages retailer audiences, shared costs, and possibly more targeted content or offers.

- Reduce standalone TV campaigns unless tied to major launches or exclusive retailer tie-ins. Negotiate co-op partnerships that include cross-channel packages (TV + in-store display + digital banners). Reinforce with QR codes, discount codes, or unique landing pages for better attribution.

**Improve Tracking of PR, Influencer, and Organic Channels** - Some sales spikes were under-predicted by the model, suggesting unmeasured drivers—like influencer buzz, organic social content, or earned media (PR)—are having more impact than currently accounted for.

- Use tools like Meltwater, Sprout, or Traackr to measure PR and influencer reach. Tag influencer-generated content (UGC) in your CRM and correlate with spikes in traffic/sales. Include UTM parameters and unique offer codes for influencer campaigns.

**Cut Back on Promotions, Focus Only on Key Calendar Moments**- Promotional activities (e.g., discounts, samples, BOGO offers) showed a sharp drop in contribution and ROI. Rather than eliminating promotions altogether, the data suggests focusing on high-impact, well-timed events that align with consumer demand and brand moments.

- Consolidate promotions around core moments: Black Friday, Cyber Monday, Valentine's Day, product launches, etc. Evaluate promotion mechanics gift-with-purchase (GWP), exclusive samples, and limited-time bundles may yield better lift than straight discounts. Pair promotions with influencer campaigns or social contests to drive excitement without heavy discounting.

