



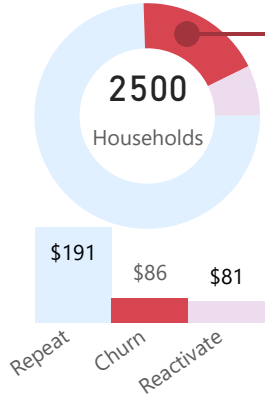
#1

Understanding churn households & its impact

Data as of: 30 Nov 2002 (Day 699th)

Why are churn households needed to be considered?

As of Nov 2002,



Churn at their last transaction

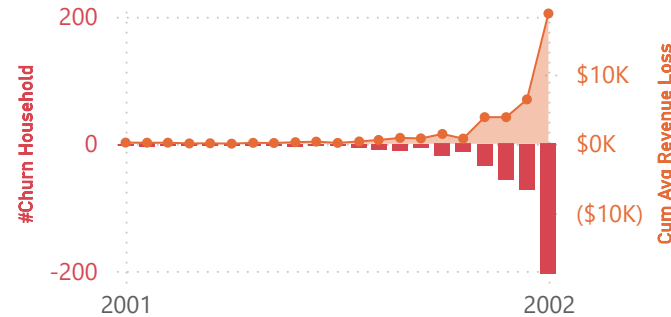
18.24%
of all households

456
#households

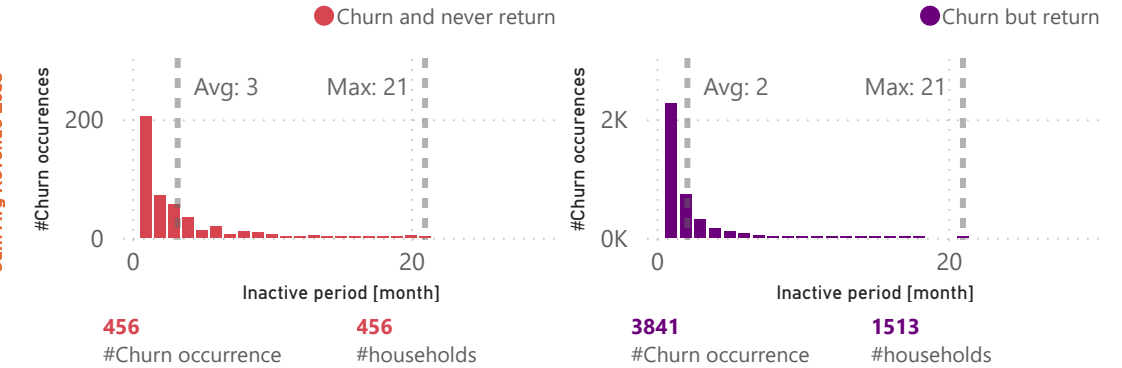
\$39,189.83
Total Avg monthly revenue from households

\$85.94
Avg monthly revenue per household

How much revenue has been lost over time as more households churn and not return?

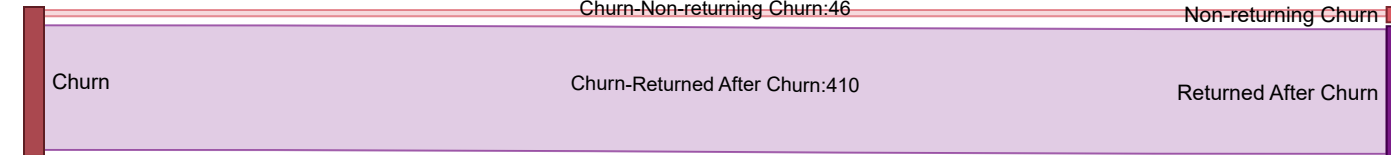


How long customers remain inactive before coming back or not returning at all?



If there's a chance to call back the households that have last status as churn ?

Status of their last transaction

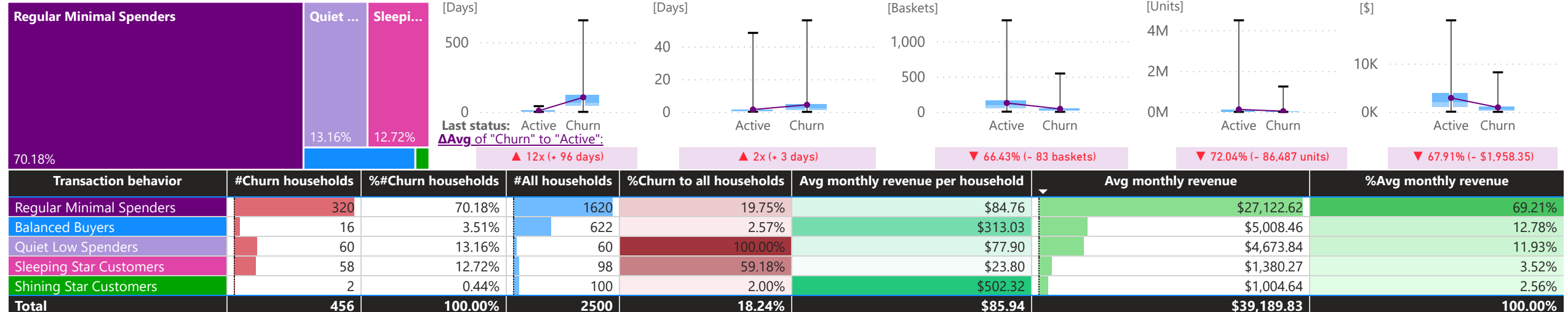


What are the customer values (Average monthly revenue per household) for each status?

Overall status\Last transaction status	Churn	New	Reactivate	Repeat	Total
Consistent Active		\$106.36		\$260.85	\$260.68
Non-returning Churn	\$159.40				\$159.40
Returned After Churn	\$77.70		\$80.80	\$118.95	\$103.21
Total	\$85.94	\$106.36	\$80.80	\$190.58	\$163.52

How do the purchasing behavior of households having churn at their last transaction look like?

Household RFM Segments





Reengage repeat purchases with Promotion [1]

Data as of: 30 Nov 2002 (Day 699th)

Filter pane

Transaction behavior

- ☐ Select all
- ☐ Balanced Buyers
- ☐ Quiet Low Spenders
- ☐ Regular Minimal Spenders
- ☐ Shining Star Customers
- ☐ Sleeping Star Customers

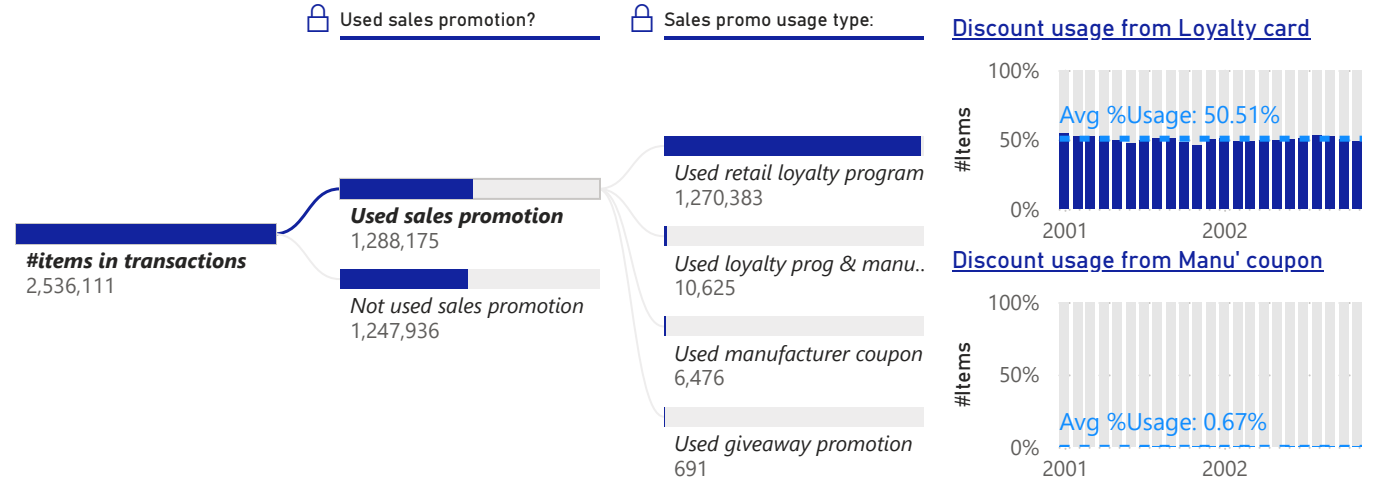
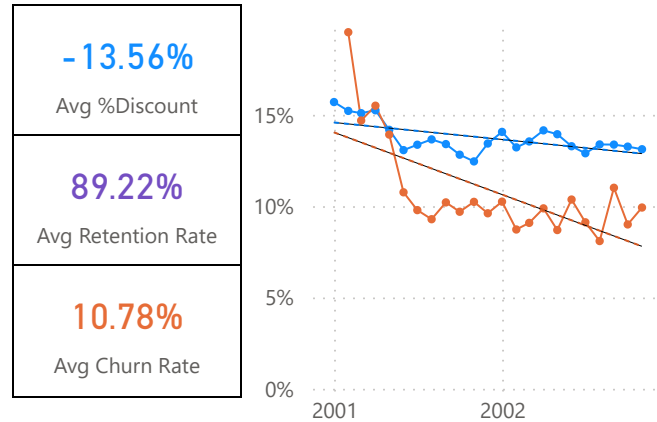
Overall Historical Status

- ☐ Select all
- ☐ Consistent Active
- ☐ Non-returning Churn
- ☐ Returned After Churn

Churn In Last purchase?

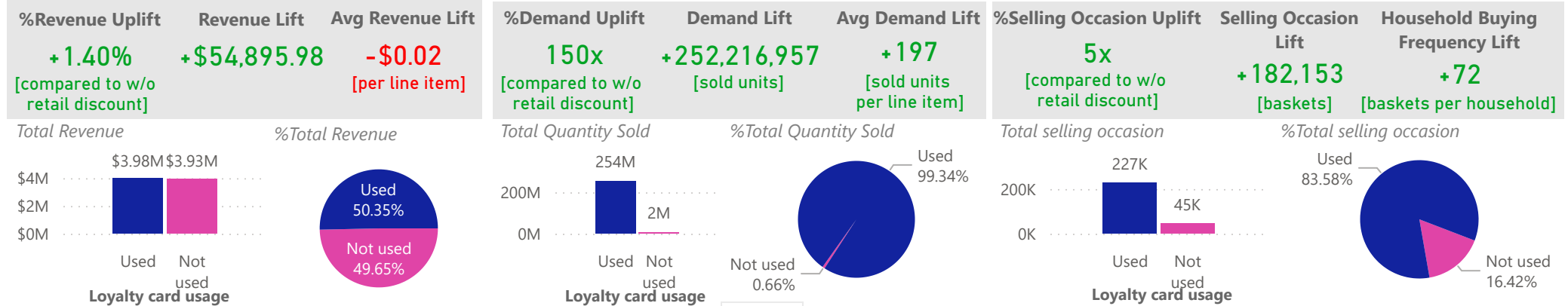
- ☐ Select all
- ☐ Active in last transaction
- ☐ Churn in last transaction

As of Nov 2002,

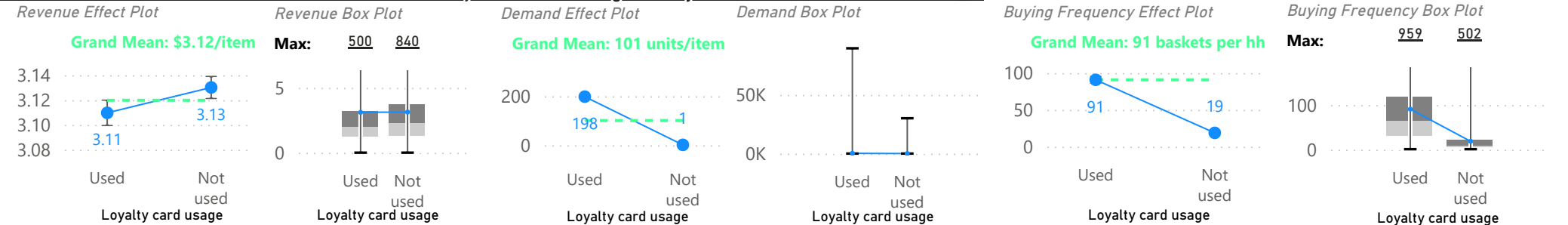


How can retail loyalty discounts drive business and customer metrics?

Given: ● Used discount from loyalty card, ● Not used discount from loyalty card



What and how business and customer metrics were affected by retail discount significantly at 99% confidence level (α)?



Tips: Interpreting effect plots

Use the plot to compare means across groups and assess the significance of differences, focusing on the overlap of confidence intervals (CI) and how far the means differ:

- If CI **overlap**, there may have no significant effect between the group levels of this metrics.
- If CI **don't overlap**, the metric has a different effect on each group level.



Remark

- Permanent Churn Level of each household (hh) is determined based on their historical purchase status.
- Each segment hh value:

Buying behavior > Perm. Churn Lv	Avg Monthly Revenue/hh
Balanced Buyers	\$294.45
Low	\$299.80
Medium	\$270.61
High	\$319.58
Quiet Low Spenders	\$77.54
Medium	\$74.59
High	\$89.32
Regular Minimal Spenders	\$98.57
Low	\$118.67
Medium	\$92.19
High	\$134.02
Shining Star Customers	\$588.82
Low	\$600.55
Medium	\$464.91
High	\$377.23
Sleeping Star Customers	\$24.06
Medium	\$23.95
High	\$29.41
Total	\$163.49

Given:

- Ant. (Antecedent) refers to the product purchase first in each basket or transaction.
- Cons. (Consequent) refers to the product purchase later in each basket or transaction.

Filter pane

Ant. Product

All

Ant. Prod. Levels

All

Ant. Prod. Manufacturer

All

Ant. Prod. Brand

All

Cons. Product

All

Cons. Prod. Levels

All

Cons. Prod. Manufactur...

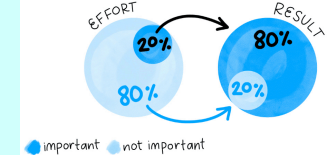
All

Cons. Prod. Brand

All

Tips: Pareto Principle

- This principle suggests that *a small proportion of inputs or actions are responsible for the majority of results.*
- The ratio in the Pareto Rule is *not fixed* and can vary by the situation.
- Default ratio is **80/20**: 20% of causes or items that contribute to 80% of the outcome or problem.



Setting parameter pane

Please set $\Delta\%$ (ranging between -1 [-100%] to +1 [100%]) for computing each measure **target** from last year by each scenario that you aims to.

Example: Given **Amount** from last year is **100 unit**.
If Δtarget of that amount from last year was set at **+5%**, then
Target = (1+0.05)(100) = 105 unit.

$\Delta\%$ Target of Revenue

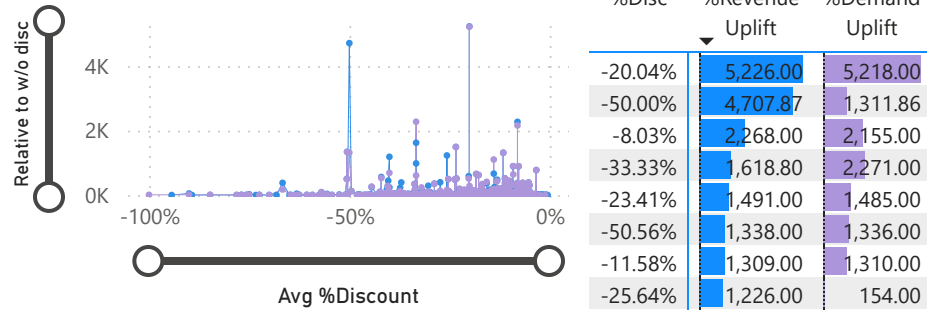
10%

$\Delta\%$ Target of Quantity sold

35%

How to optimize discounts and where to take action for maximum business impact?

Discount level and Uplift



Click + to drill down more granular levels of product details:

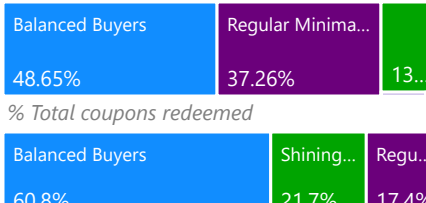
Demand Pattern	Avg %Discount	%Retail Disc Usage	%Revenue Uplift	%Demand Uplift
Erratic	-20.30%	60.03%	62.95%	176.28%
Lumpy	-18.55%	58.62%	42.18%	229.92%
Intermittent	-12.00%	48.62%	-21.26%	896.20%
Smooth	-8.36%	39.41%	69.64%	89693.05%

Which household segments present high potential for reengagement?

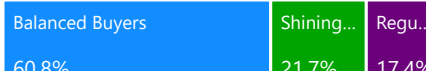
Responsiveness of each RFM segment on sales promotion

Transaction behavior	%Retail Disc Usage	%Coupon Redemption
Shining Star Customers	51.31%	2.07%
Balanced Buyers	50.46%	1.59%
Quiet Low Spenders	52.69%	0.73%
Regular Minimal Spenders	50.29%	0.58%
Sleeping Star Customers	45.88%	0.00%
Total	50.51%	1.26%

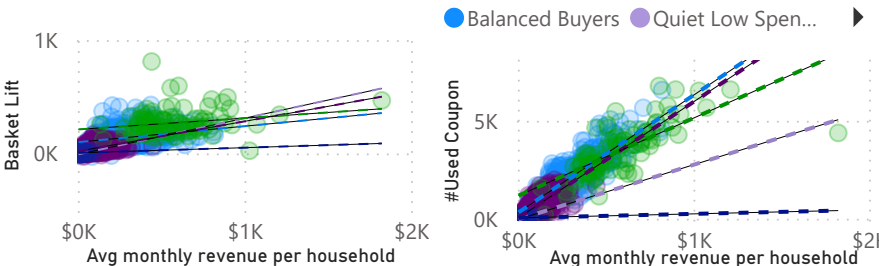
% Total line item having Retail discount usage



% Total coupons redeemed

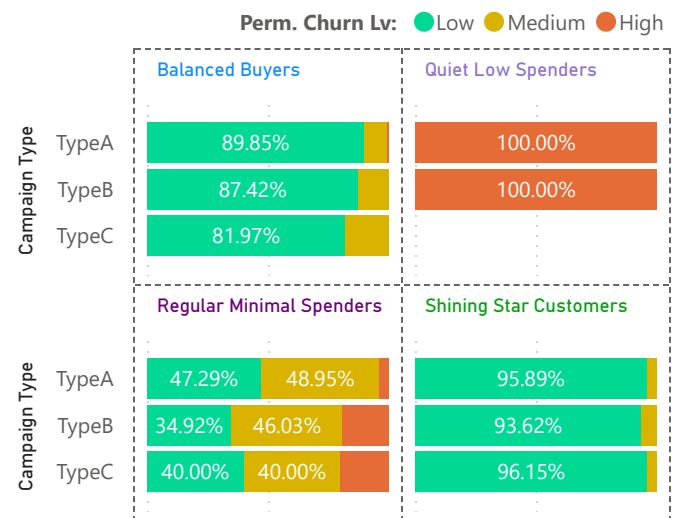


Household value vs. Engagement Metrics



How to personalized promotions to boost repeat purchases?

Identify priority campaign types based on permanent churn level



Identify high potential for churn reduction from #Churn occurrences before and after the campaign period

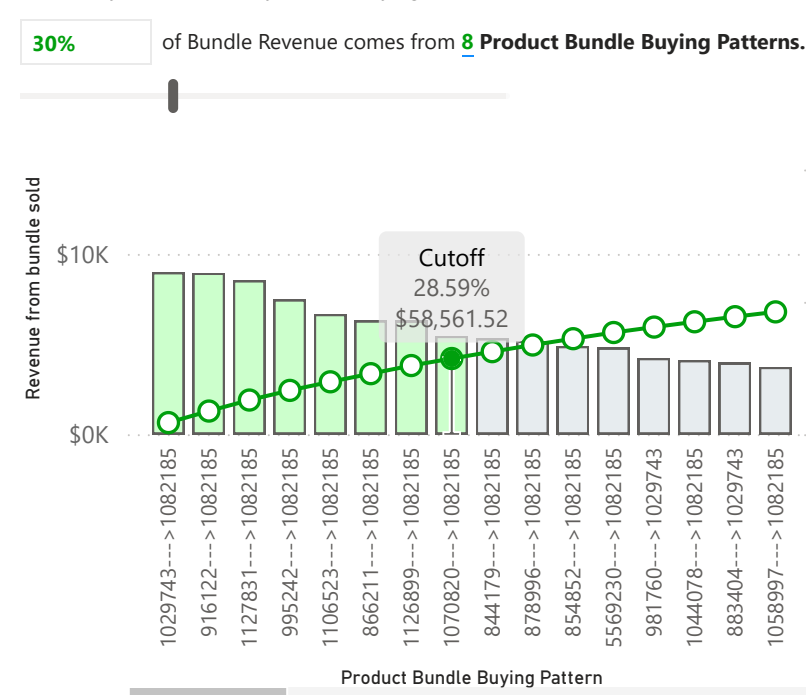
	Buying behavior	Balanced Buyers		Regular Minimal Spenders		Shining Star Customers
Campaign Type	Campaign	High	Medium	Low	Medium	High
TypeA	8	100.00%	66.67%	0.00%	100.00%	
	13	100.00%	33.33%	0.00%	58.33%	100.00%
	18	100.00%	88.89%	90.00%	80.95%	100.00%
	30		100.00%			100.00%
TypeB	5	100.00%				
	10	100.00%	100.00%			100.00%
	17		100.00%	0.00%		
	19		100.00%			100.00%
	23	100.00%	100.00%			
	24				100.00%	
TypeC	14	100.00%	0.00%			
	15				100.00%	
	20		100.00%			100.00%

Click cell in matrix to filter relevant product & click + to drill down in store detail :

Product	#Cmpgn.
BANANAS (1082185)	56
EGGS - X-LARGE (981760)	24
CELERY (962568)	19
CARROTS MINI PEELED (961551)	17
FLUID MILK	16

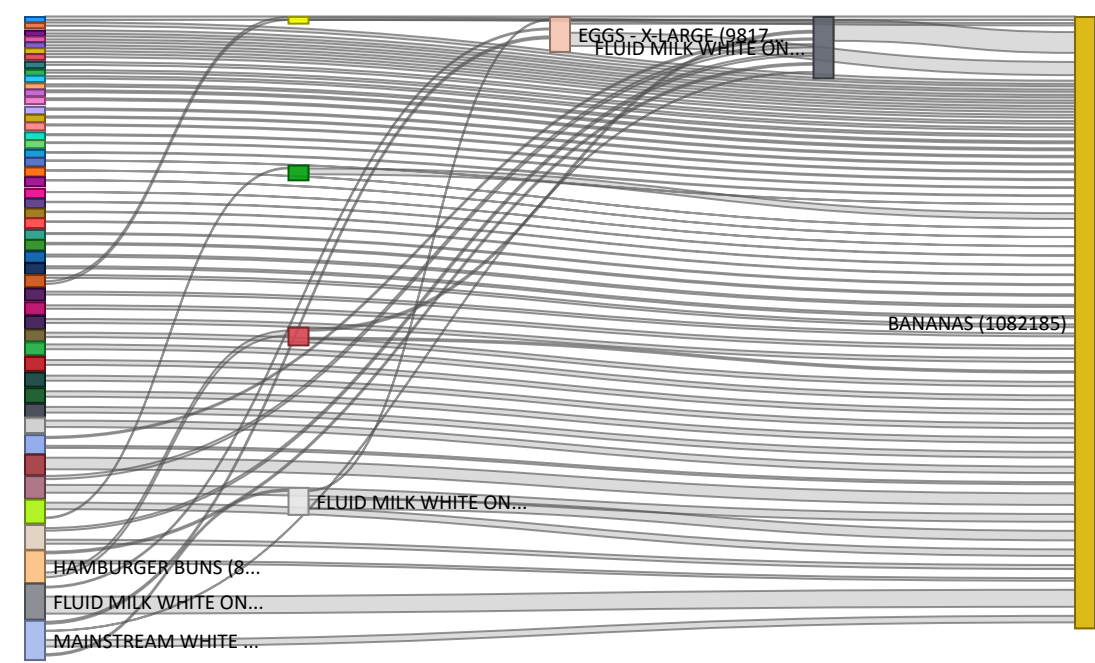
Prioritize product bundles having a high impact on driving significant revenue

Pareto Analysis of Revenue by product buying patterns



Top 20% Revenue-Generating Product Buying Patterns from Market Basket Analysis (Association Rule Mining)

Click the rule in pareto chart to visualize product buying pattern



No.	Product Bundle Association Rule	Antecedent Product	Consequent Product	#Applied basket	Confidence	Lift	%Repeat Purchase	Revenue from bundle sold	%Revenue to GT	Cumulative Revenue	%Cumulative Revenue
1	1029743--->1082185	FLUID MILK WHITE ONLY (1029743)	BANANAS (1082185)	3,442	23.89%	2.22	90.68%	\$8,972.46	4.38%	\$8,972.46	4.38%
2	916122--->1082185	CHICKEN BREAST BONELESS (916122)	BANANAS (1082185)	1,319	29.92%	2.77	88.44%	\$8,939.75	4.36%	\$17,912.21	8.74%
3	1127831--->1082185	STRAWBERRIES (1127831)	BANANAS (1082185)	2,347	44.58%	4.13	88.32%	\$8,522.43	4.16%	\$26,434.64	12.90%
4	995242--->1082185	FLUID MILK WHITE ONLY (995242)	BANANAS (1082185)	2,987	23.84%	2.21	89.94%	\$7,461.88	3.64%	\$33,896.51	16.55%
5	1106523--->1082185	FLUID MILK WHITE ONLY (1106523)	BANANAS (1082185)	2,099	21.44%	1.99	90.34%	\$6,652.37	3.25%	\$40,548.88	19.79%
6	866211--->1082185	GRAPES WHITE (866211)	BANANAS (1082185)	1,644	45.20%	4.19	87.79%	\$6,292.43	3.07%	\$46,841.32	22.86%
7	1126899--->1082185	FLUID MILK WHITE ONLY (1126899)	BANANAS (1082185)	1,735	38.72%	3.59	87.93%	\$6,280.99	3.07%	\$53,122.31	25.93%
8	1070820--->1082185	FLUID MILK WHITE ONLY (1070820)	BANANAS (1082185)	1,622	36.55%	3.39	87.68%	\$5,439.22	2.66%	\$58,561.52	28.59%
9	844179--->1082185	PRIMAL (844179)	BANANAS (1082185)	961	24.39%	2.26	89.20%	\$5,303.07	2.59%	\$63,864.59	31.17%
10	878996--->1082185	GRAPES RED (878996)	BANANAS (1082185)	1,545	43.07%	3.99	88.25%	\$5,168.52	2.52%	\$69,033.11	33.70%
11	854852--->1082185	TOMATOES HOTHOUSE ON THE VINE (854852)	BANANAS (1082185)	1,572	38.60%	3.58	88.64%	\$4,874.59	2.38%	\$73,907.70	36.08%
12	5569230--->1082185	SOFT DRINKS 12/18&15PK CAN CAR (5569230)	BANANAS (1082185)	976	20.20%	1.87	89.27%	\$4,785.20	2.34%	\$78,692.89	38.41%
13	981760--->1029743	EGGS - X-LARGE (981760)	FLUID MILK WHITE ONLY (1029743)	1,406	15.42%	2.95	85.05%	\$4,209.84	2.05%	\$82,902.74	40.47%
14	1044078--->1082185	LEAN (1044078)	BANANAS (1082185)	821	20.26%	1.88	89.12%	\$4,092.22	2.00%	\$86,994.96	42.46%
15	883404--->1029743	MAINSTREAM WHITE BREAD (883404)	FLUID MILK WHITE ONLY (1029743)	1,283	18.60%	3.56	80.72%	\$3,950.35	1.93%	\$90,945.31	44.39%
16	1058997--->1082185	FLUID MILK WHITE ONLY (1058997)	BANANAS (1082185)	1,493	36.46%	3.38	87.91%	\$3,717.85	1.81%	\$94,663.16	46.21%
17	951590--->1029743	MAINSTREAM WHITE BREAD (951590)	FLUID MILK WHITE ONLY (1029743)	994	16.23%	3.11	81.09%	\$3,603.01	1.76%	\$98,266.16	47.97%
18	951590--->1082185	MAINSTREAM WHITE BREAD (951590)	BANANAS (1082185)	1,746	28.51%	2.64	88.68%	\$3,568.90	1.74%	\$101,835.06	49.71%

Pinpoint types of Direct Marketing Promotion effective for encouraging repeat purchase (%)

In-Store Display Location	Balanced Buyers	Quiet Low Spenders	Regular Minimal Spenders	Shining Star Customers	Sleeping Star Customers	Total	Direct-Mail Location	Balanced Buyers	Quiet Low Spenders	Regular Minimal Spenders	Shining Star Customers	Sleeping Star Customers	Total
Not on Display	100.00%	82.00%	99.32%	100.00%	78.65%	98.42%	Not on ad	100.00%	75.00%	98.94%	100.00%	66.23%	97.75%
In-Aisle	99.68%	51.35%	91.80%	99.00%	36.96%	92.48%	Interior page feature	100.00%	75.00%	99.00%	100.00%	66.67%	97.72%
Front End Cap	99.68%	41.38%	89.10%	99.00%	28.95%	90.82%	Front page feature	100.00%	65.96%	97.74%	100.00%	59.42%	96.70%
Rear End Cap	99.68%	51.52%	89.04%	100.00%	17.14%	90.76%	Back page feature	98.70%	55.56%	85.75%	100.00%	31.25%	88.87%
Secondary Location Display	99.52%	51.52%	88.63%	99.00%	25.00%	90.29%	Wrap front feature	100.00%	47.83%	83.66%	98.00%	8.82%	87.34%
Store Rear	98.22%	55.17%	88.77%	100.00%	14.63%	90.07%	Interior page line item	79.71%	40.00%	43.62%	89.36%	25.00%	60.23%
Side-Aisle End Cap	95.42%	60.00%	75.94%	100.00%	21.05%	82.39%	Wrap back feature	71.48%	25.00%	36.28%	80.43%		53.37%
Store Front	95.71%	42.31%	77.03%	95.96%	15.63%	82.10%	Wrap interior coupon	70.32%	14.29%	33.89%	88.17%		51.25%
In-Shelf	91.27%	45.00%	72.36%	98.95%	25.00%	79.26%	Free on interior page	46.65%		27.25%	53.42%		38.19%
Mid-Aisle End Cap	70.54%	50.00%	54.53%	75.68%		61.12%	Free on front page, back page or wrap	19.78%		9.09%	14.81%		14.29%

Click in the class of Display Location / Mailer >> Store >> Product levels to drill down in aspect of and see more detail of time series pattern.

Store	%ΔVar	Current to Target	Current yr Amount	Target Amount	Amount by date	Product Category	%ΔVar	Current to Target	Current yr Amount	Target Amount
367	0.14%		140,272	140,075		Travel & Services				
406	5.52%		116,453	110,361		KIOSK-GAS	28.45%		318,573	248,012
429	19.78%		80,950	67,584		AUTOMOTIVE	-1.09%		235	237
292	26.59%		75,665	59,773		Other				
343	4.55%		75,130	71,858		MISC. TRANS.	-45.16%		3,162	5,766
356	7.60%		74,578	69,311		MISC SALES TRAN	29.77%		68,399	52,706
321	27.77%		68,557	53,658		Media & Entertainment				
31782	16.41%		68,348	58,715		VIDEO	-100.00%			23
323	23.99%		67,316	54,291		PHOTO	-14.51%		6	7
381	-12.83%		64,851	74,399		Marketing & Merchandise				
369	12.72%		64,071	56,838		TOYS	-38.23%		3	5
384	51.47%		63,154	41,694		PROD-WHS SALES	-100.00%			5
375	-15.22%		62,924	74,218		GM MERCH EXP	667.25%		90	11
Total	10.00%		4,411,547	4,010,485						

