

Coffee Cafe Night - Market Risk Analysis

[Link to Tableau Presentation](#)

Project Description and Requirement

"The data set provided to you is the data set of a Café Chain for one of its restaurants. Do a thorough analysis of the data and come up with the following analysis and present it in a PowerPoint deck of 10 – 20 slides.

The owner of the restaurant wants you to use this data to come up with a set of recommendations that can help his Café Chain increase his revenues. He has not been able to launch a loyalty program and is unable to provide you with a data set that has customer level information. But, he is able to provide you with a data set for POS (point of sale data) for one of his chains.

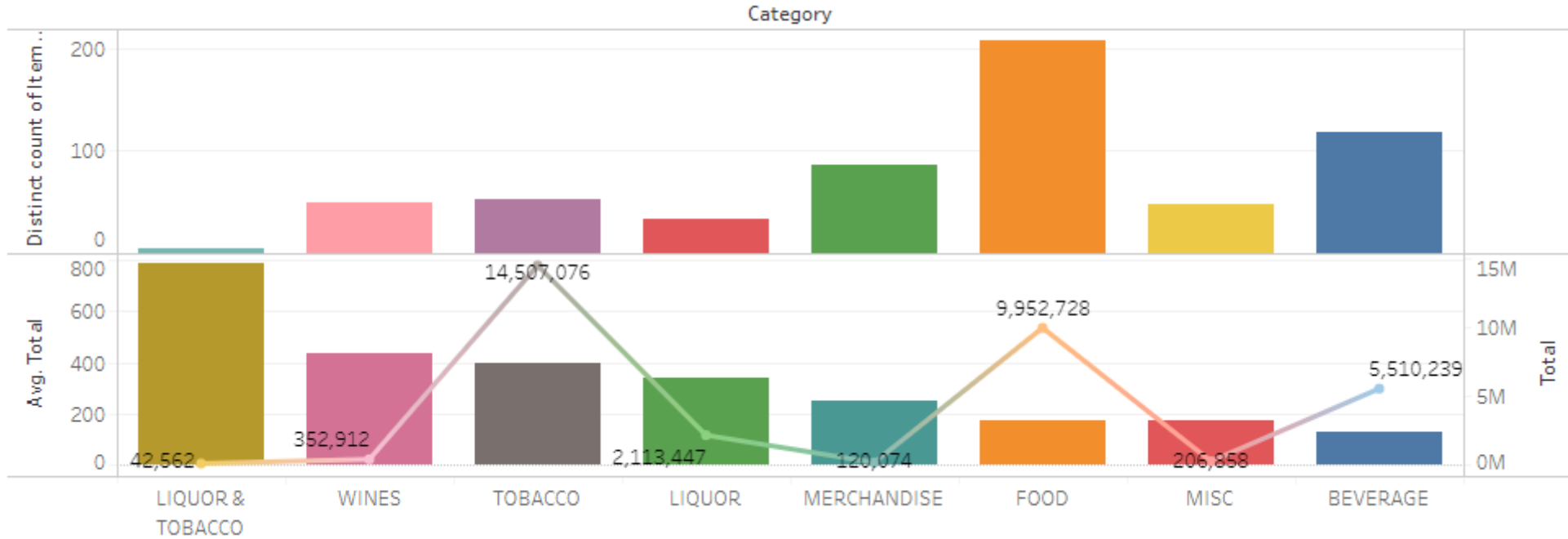
- Exploratory Analysis (45 Marks)
 1. Exploratory Analysis of data & an executive summary of your top findings, supported by graphs. 15 Marks
 2. What kind of trends do you notice in terms of consumer behavior over different times of the day and different days of the week? Can you give concrete recommendations based on the same? 10 Marks
 3. Are there certain menu items that can be taken off the menu? 10 Marks
 4. Are there trends across months that you are able to notice? 10 Marks
- Menu Analysis- (45 Marks)
- Identify the most popular combos that can be suggested to the restaurant chain after a thorough analysis of the most commonly occurring sets of menu items in the customer orders. The restaurant doesn't have any combo meals. Can you suggest the best combo meals? (45 Marks)

EDA

- The data is for time period 1-Apr-2010 till 31-Mar-2011
- Number of rows: 1,45,830 (identified by Item Desc)
- Number of columns(variables): 10
- Data of 580 unique Menu Items (identified by Item Desc)
- Data of 69,982 transactions (identified by Bill numbers); Most transactions have Food, Beverages, and Tobacco
- Tax values range from 0 to 2731.25
- Discount range from 0 to 825
- Variables in the data are as follows -

Date	Date of transaction
Bill Number	Bill number of the transaction
Item Desc	Description of the item ordered
Time	Time of transaction
Quantity	Number of quantity ordered for a item
Rate	Price per one quantity of the item
Tax	Total tax amount for the item
Discount	Total discount amount
Total	Total price excluding the discount
Category	Category Values: Beverage, Food, Liquor, Liquor &Tobacco,Merchandise, Misc, Tobacco, Wines.

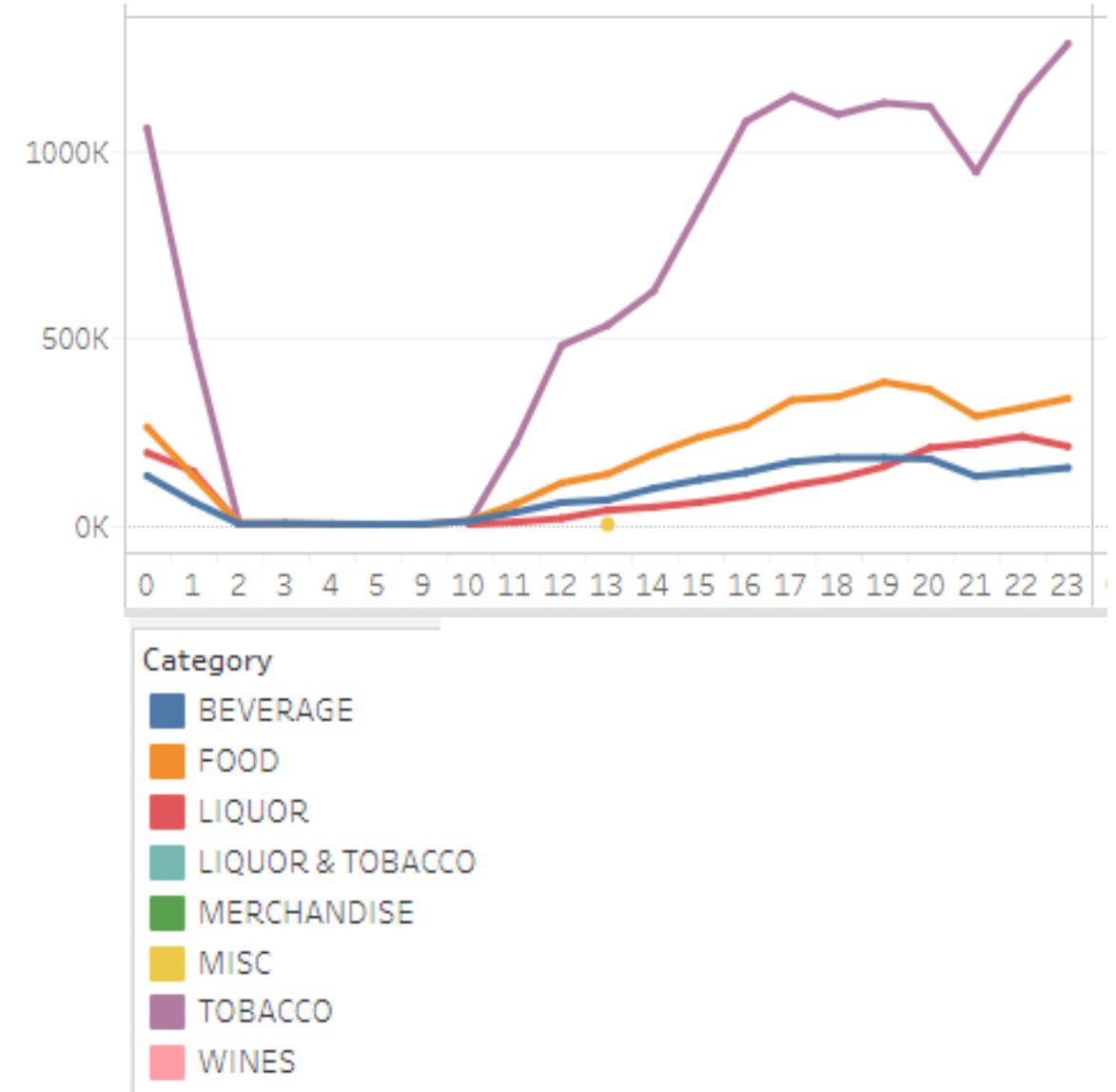
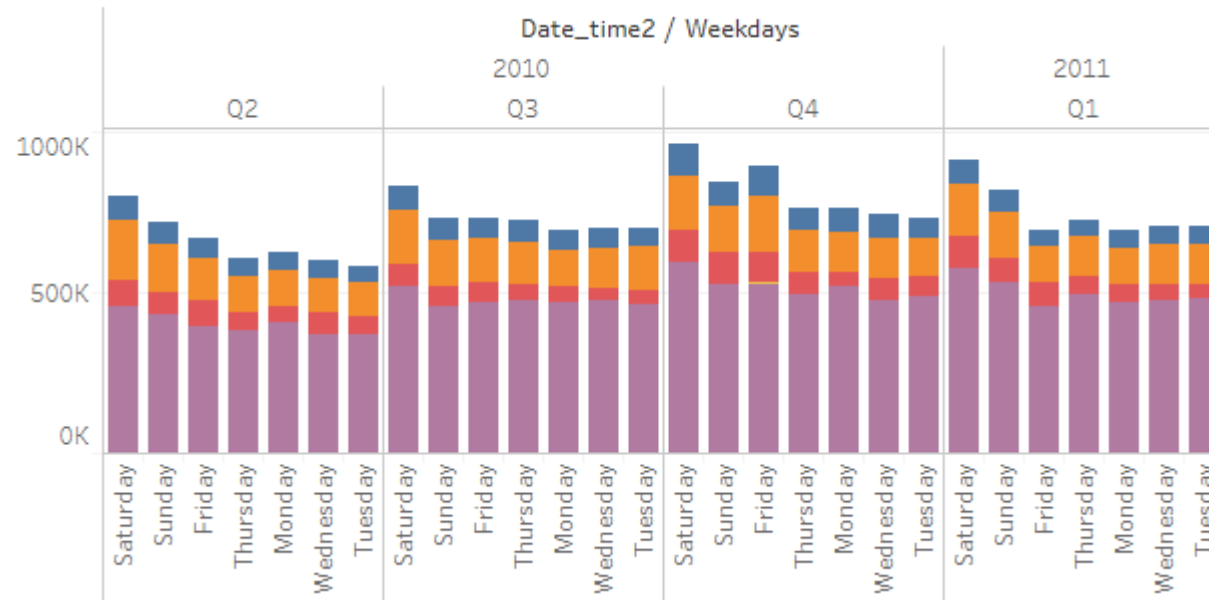
Average Sales Analysis per Category



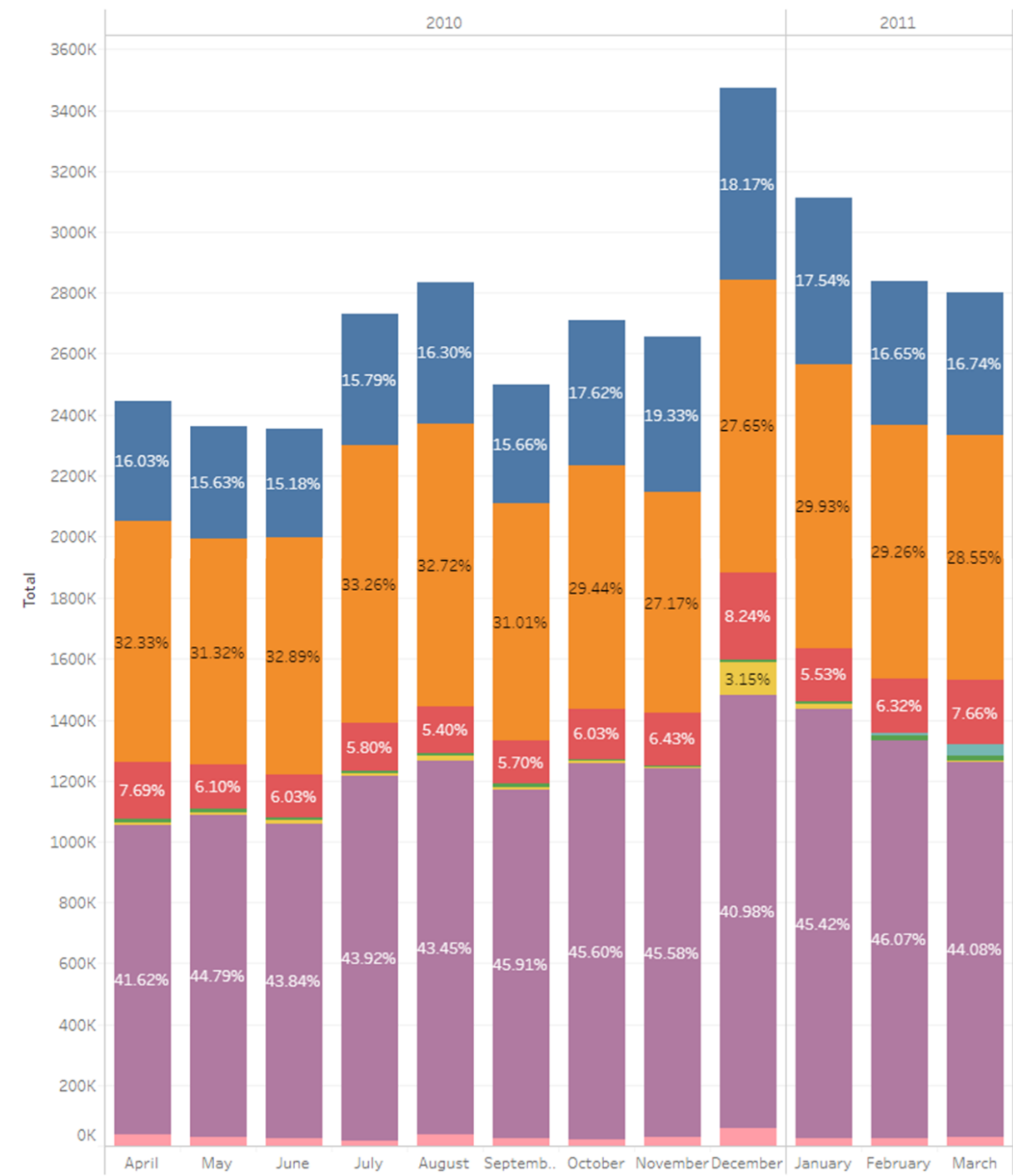
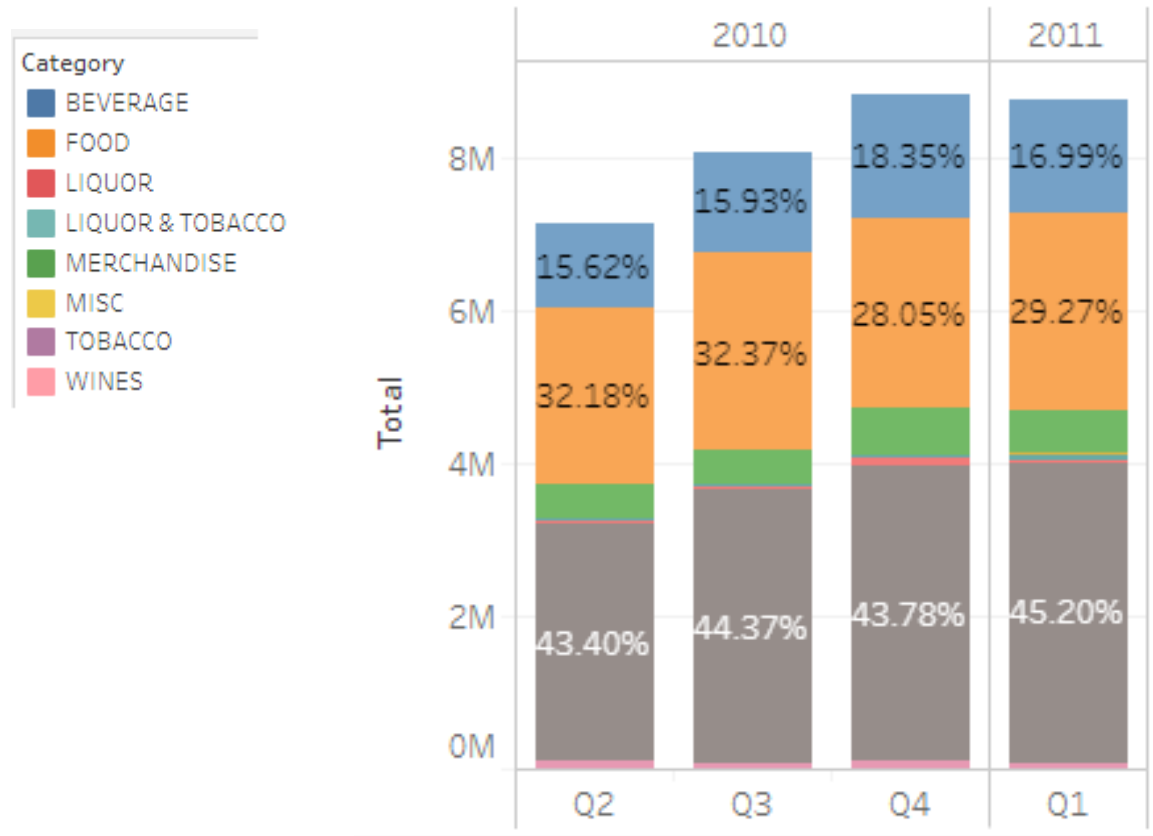
- The graph shows average sales and count of unique items per category to help us understand the number of items in each category and whether or not number of items is proportional to sales.
- We can see that Food category has over 200 items and Beverage category has over 100 items, however average sales produced in these categories is less
- In Liquor & Tobacco, Wines categories, the average sales is higher even though number of items in these categories is 50 or lesser.
- Merchandise sales are doing reasonably well

Weekly & Hourly Sales Analysis

- Weekend show higher sales compared to Weekday sales
- Hourly Analysis shows that no sales are happening during 2 AM till 10 AM. Sales pickup after 10 AM. Café can be closed during this time

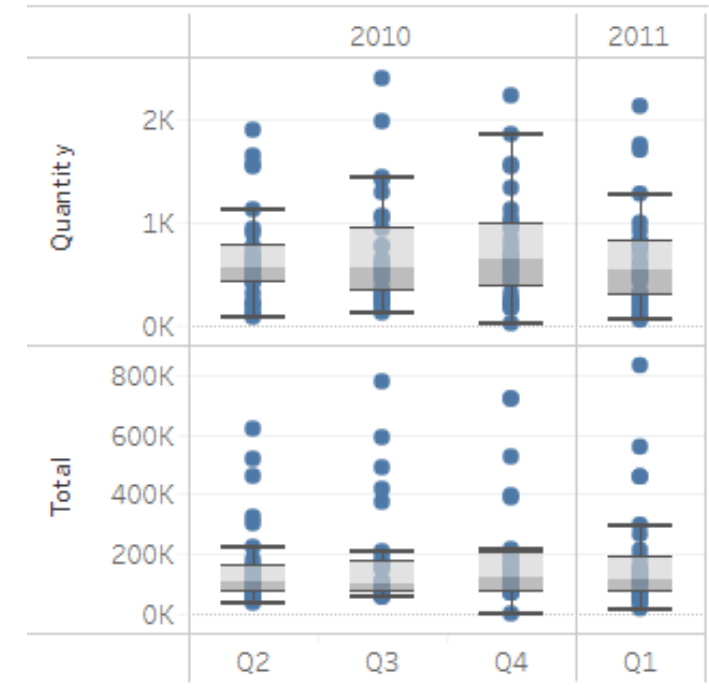


Quarterly and Monthly Sales Analysis

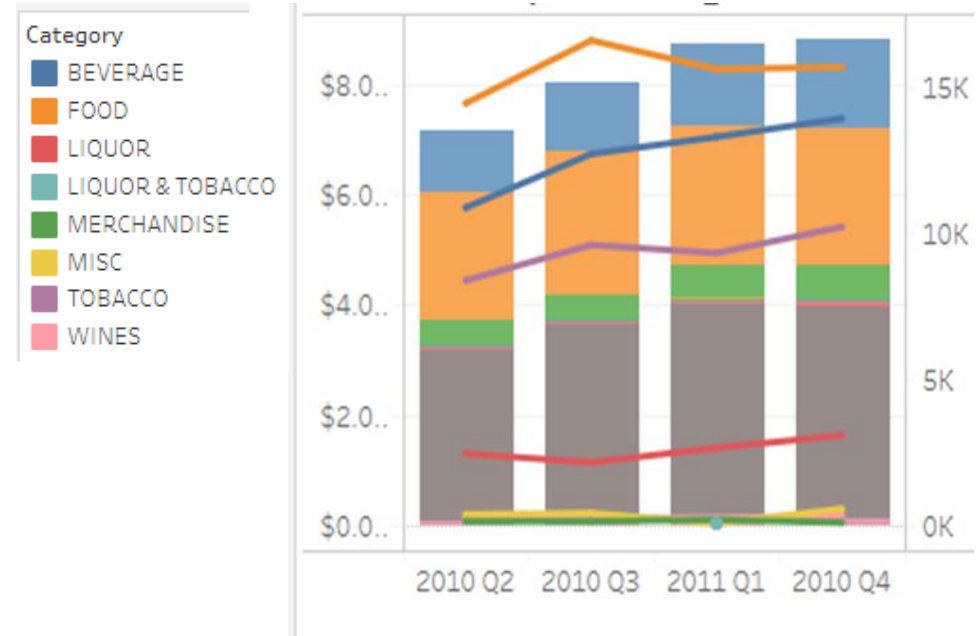


Quarterly and Monthly Sales Analysis

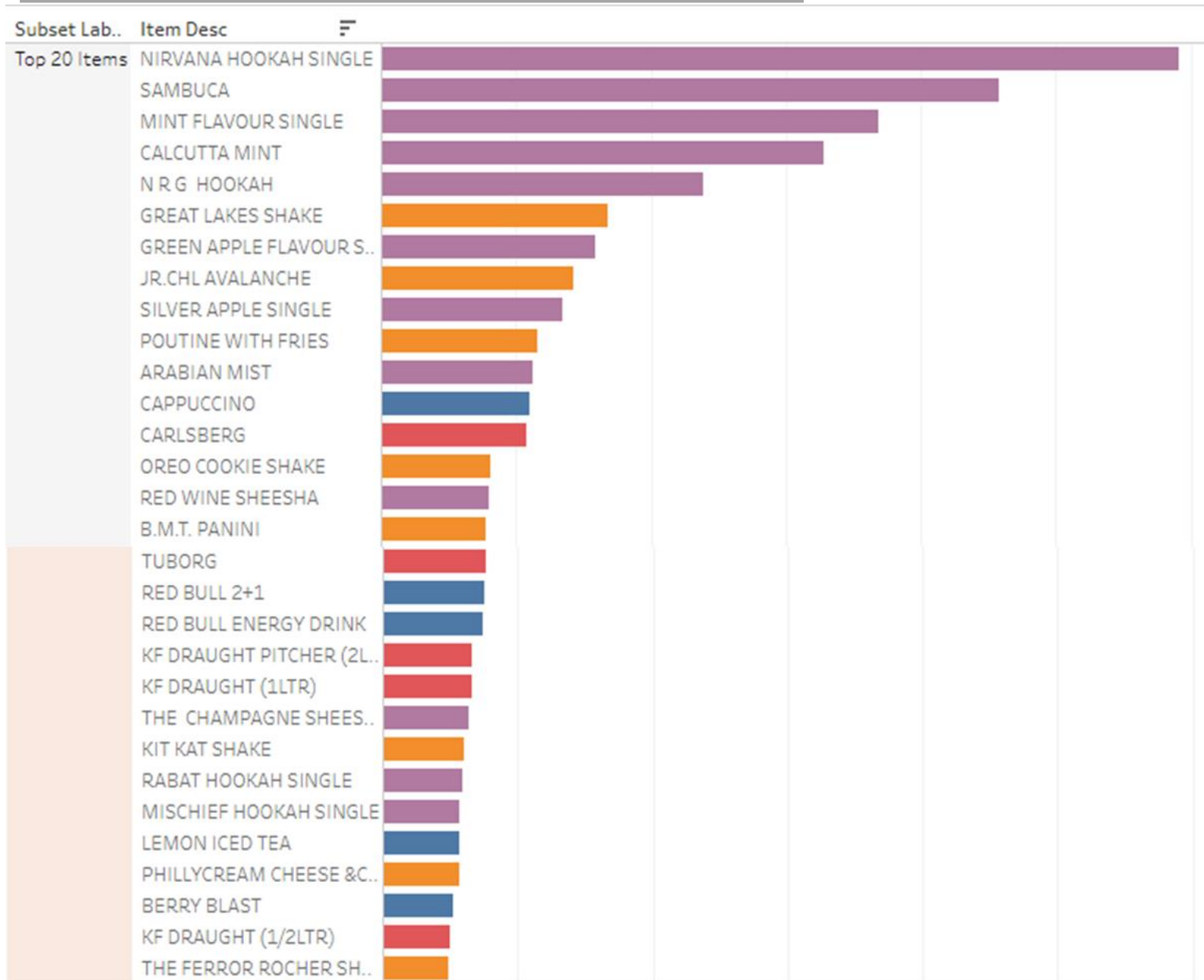
Category	Q2		2010 Q3		Q4		2011 Q1	
	Quantity	Total	Quantity	Total	Quantity	Total	Quantity	Total
BEVERAGE	10,834	1,117,464	12,671	1,283,578	13,881	1,621,999	13,251	1,487,198
FOOD	14,398	2,302,713	16,545	2,608,645	15,634	2,479,937	15,564	2,561,433
LIQUOR	2,437	473,614	2,144	453,568	3,066	620,330	2,637	565,935
LIQUOR & TOBACCO							63	42,562
MERCHANDISE	135	32,935	136	26,774	96	18,859	184	41,505
MISC	361	31,467	411	33,787	556	123,207	57	18,397
TOBACCO	8,352	3,105,128	9,564	3,575,952	10,181	3,870,081	9,287	3,955,915
WINES	250	91,933	243	76,548	345	105,617	236	78,813
Grand Total	36,767	7,155,254	41,714	8,058,854	43,759	8,840,031	41,279	8,751,757



- The graph shows average sales monthly and quarterly
- Sales during December and January is higher which can attributed to weather and holiday season; Sales are slightly higher during monsoon seasons (July and August) as well
- 2011 Q1 sales are higher compared to previous quarters; however, percentage of sales share in food category has reduced
- Sales revenue is generated from the category Tobacco followed by Food and Beverage.



TOP-20 Items Sales

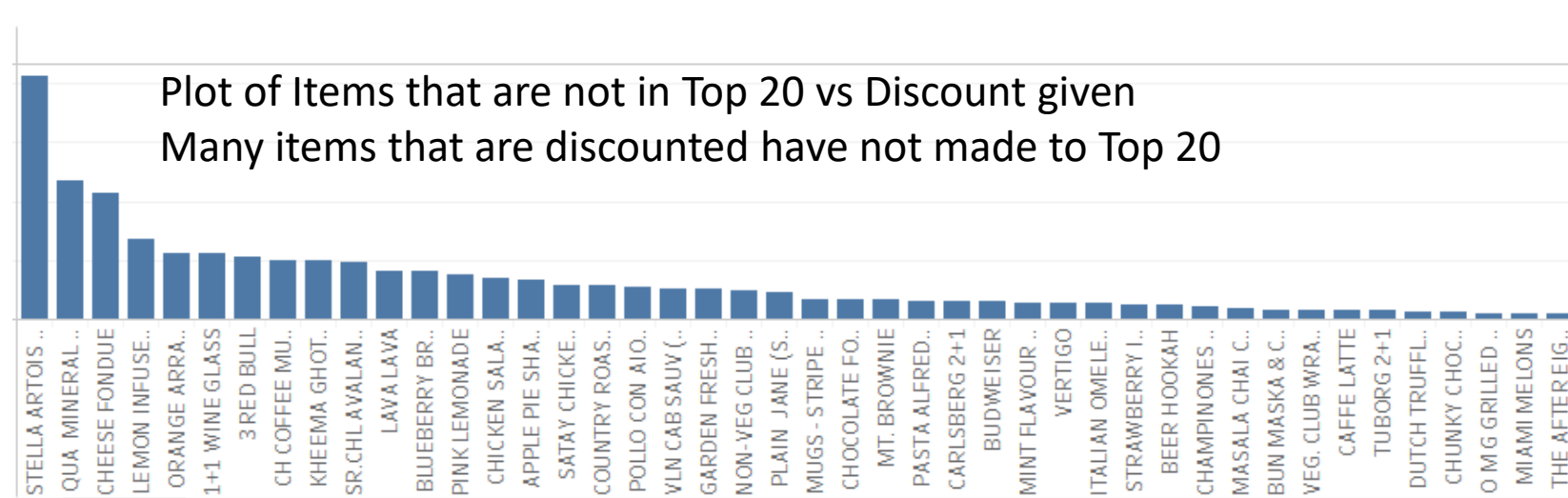


Plot of the relative frequency of each item for the top 20 items by item frequency (i.e. the fraction of transactions that each item appears in).



TOP-20 Items (Sales vs Discount)

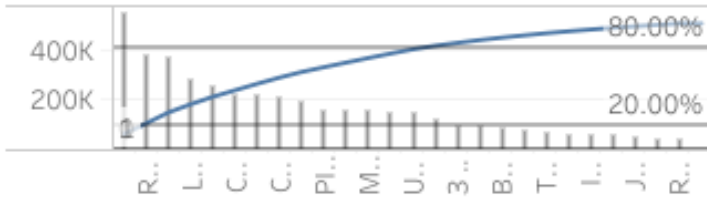
BEVERAGE	CAPPUCCINO
	RED BULL 2+1
	RED BULL ENERGY DRINK
	LEMON ICED TEA
	BERRY BLAST
FOOD	GREAT LAKES SHAKE
	JR.CHL AVALANCHE
	POUTINE WITH FRIES
	OREO COOKIE SHAKE
	B.M.T. PANINI
	KIT KAT SHAKE
	PHILLYCREAM CHEESE & CHILLY PAN
LIQUOR	THE FERROR ROCHER SHAKE
	CARLSBERG
	TUBORG
	KF DRAUGHT PITCHER (2LTR)
	KF DRAUGHT (1LTR)
MISC	KF DRAUGHT (1/2LTR)
	RED BULL 2+1
TOBACCO	NIRVANA HOOKAH SINGLE
	SAMBUCA
	MINT FLAVOUR SINGLE
	CALCUTTA MINT
	N R G HOOKAH
	GREEN APPLE FLAVOUR SINGLE
	SILVER APPLE SINGLE
	ARABIAN MIST
	RED WINE SHEESHA
	THE CHAMPAGNE SHEESHA
	RABAT HOOKAH SINGLE
	MISCHIEF HOOKAH SINGLE



Pareto Chart per Category

The 80/20 Rule (also known as the Pareto Principle) is a formula stating that 80% of sales are made by 20% of items. Using this principle, items that are at the bottom of sales can be removed to increase profitability.

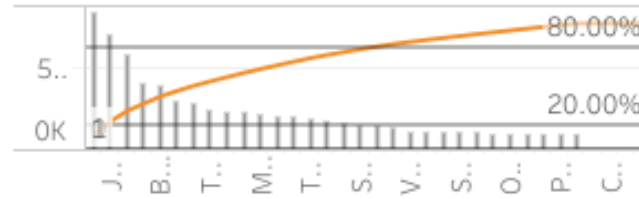
Pareto-Chart1 - Beverages



Top 14 Items that constitute 80% of Sales under Beverages-

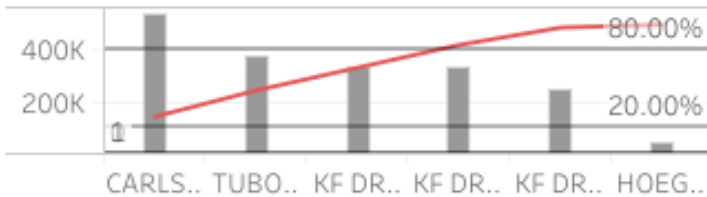
CAPPUCCINO | MASALA CHAI CUTTING
RED BULL ENERGY DRINK | LEMON ICED TEA
COUNTRY LEMONADE | ..

Pareto-Chart2 - Food



Top 15 Items that constitute 80% of Sales under Food Category-
GREAT LAKES SHAKE
JR.CHL AVALANCHE
POUTINE WITH FRIES
OREO COOKIE SHAKE..

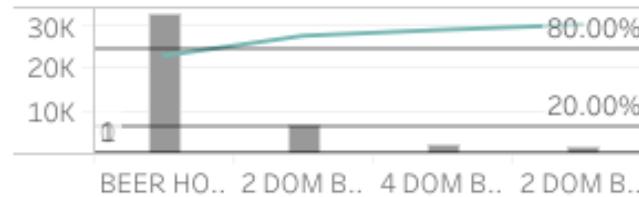
Pareto-Chart3 - Liquor



Top 4 Items that constitute 80% of Sales under Liquor-

CARLSBERG
TUBORG
KF DRAUGHT PITCHER (2LTR)..

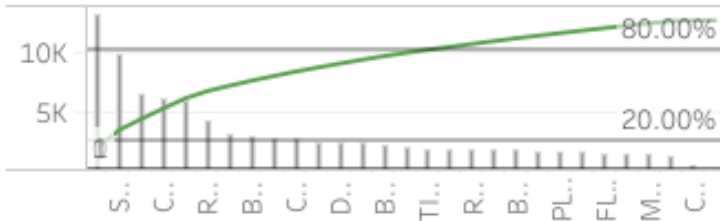
Pareto-Chart4 - Liquor and Tobacco



Top 3 Items that constitute 80% of Sales under Liquor & Tobacco -

BEER HOOKAH
2 DOM BEER + 1 SPL SHEESHA
4 DOM BEER + 1 SPL SHEESHA

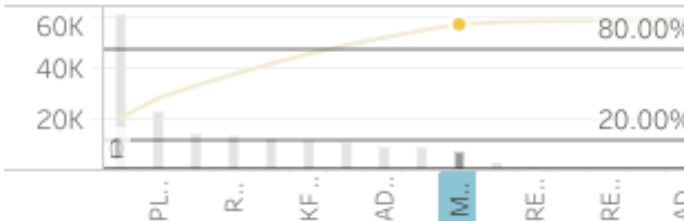
Pareto-Chart5 - Merchandise



Top 15 Items that constitute 80% of Sales under MERCHANDISE-

GREAT LAKES T-SHIRT | SANDASS
FLAVOUR 500 GMS | CH COFFEE MUGS
CH TINS | ROCKSTAR TOOTHPICK HOLDER
DAILY BEER GLASS | BODHI PLANTER CUM
CANDLE STAND..

Pareto-Chart6 - MISC



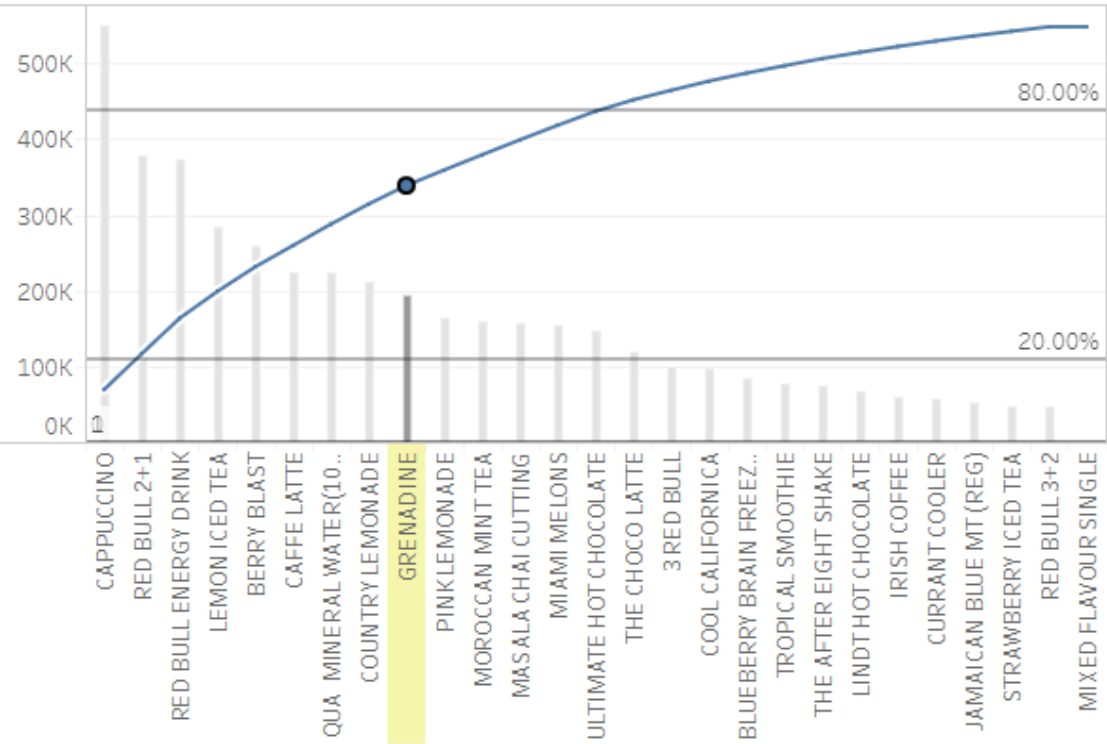
Top 7 Items that constitute 80% of Sales under MISC Category-

RED BULL SHEESHA
PLAIN JANE (CHOCOLATE)
PARTY CHARGES (@ 500)
ROSE FLAVOUR SINGLE..

Pareto Chart per Category

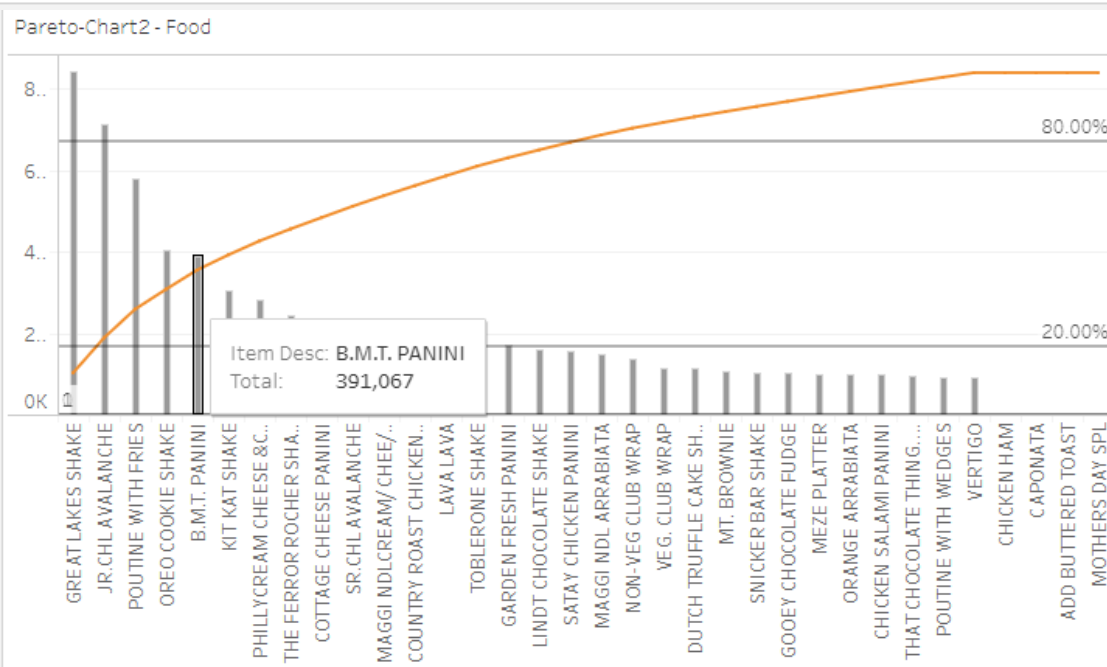
Items that can be removed from Beverages category

- MIXED FLAVOUR SINGLE
- REDBULL3+2
- STRAWBERRY ICED TEA
- JAMAICAN BLUE MT (RED)
- CURRANT COOLER



Items that can be removed from Food category

- MOTHERS DAY SPL
- ADD BUTTERED TOAST
- CAPONATA
- CHICKEN HAM
- VERTIGO
- POUTINE WITH WEDGES

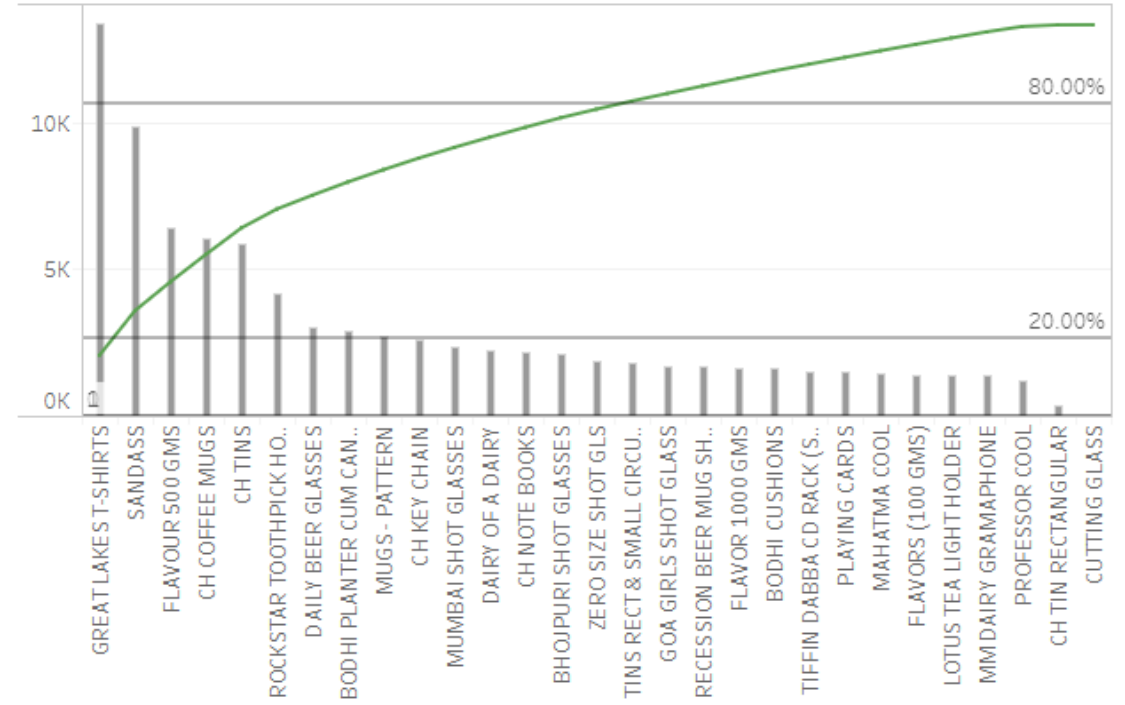


Pareto Chart per Category

Items that can be removed from Merchandise category

- CUTTING GLASS
- CH TIN RECTANGULAR
- PROFESSOR COOL
- MM DAIRY GRAMAPHONE
- LOTUS TEA LIGHT HOLDER

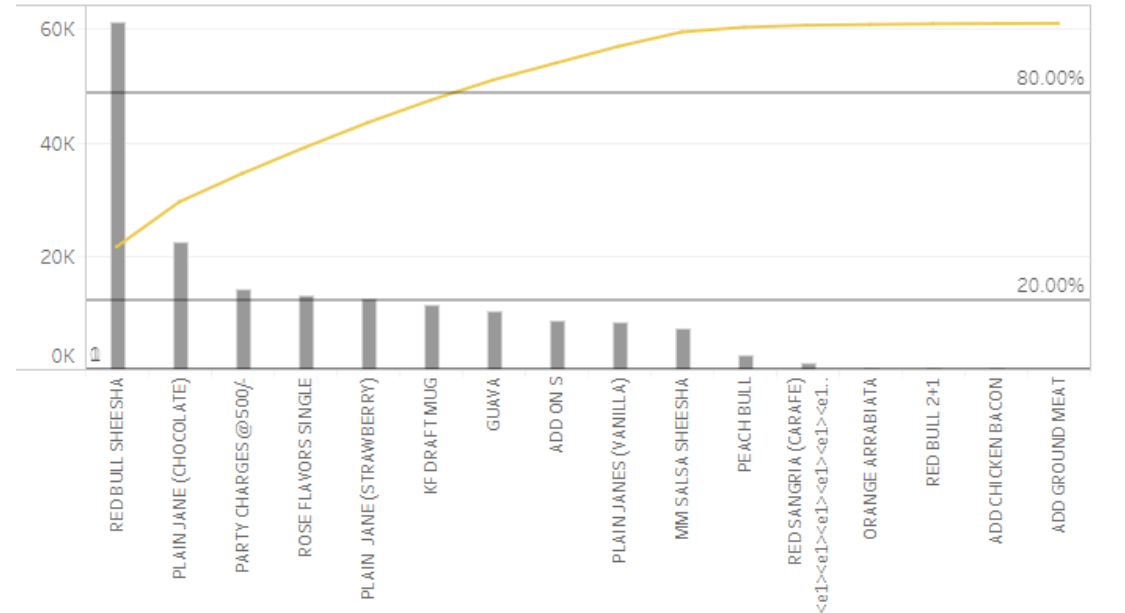
Pareto-Chart5 - Merchandise



Items that can be removed from MISC category

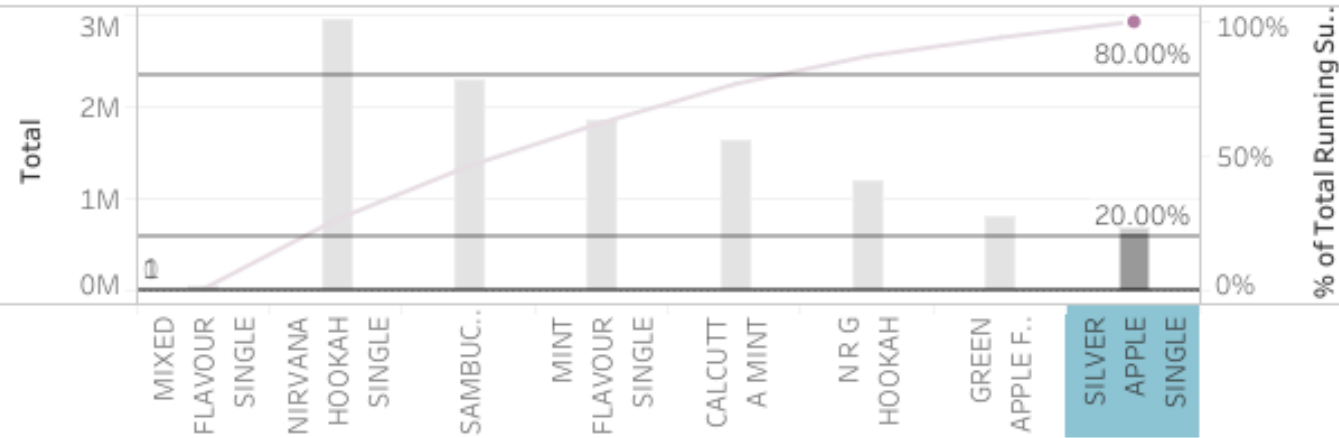
- ADD GROUND MEAT
- ADD CHICKEN BACON
- ORANGE ARABIATA
- RED SANGRIA

Pareto-Chart6 - MISC



Pareto Chart per Category

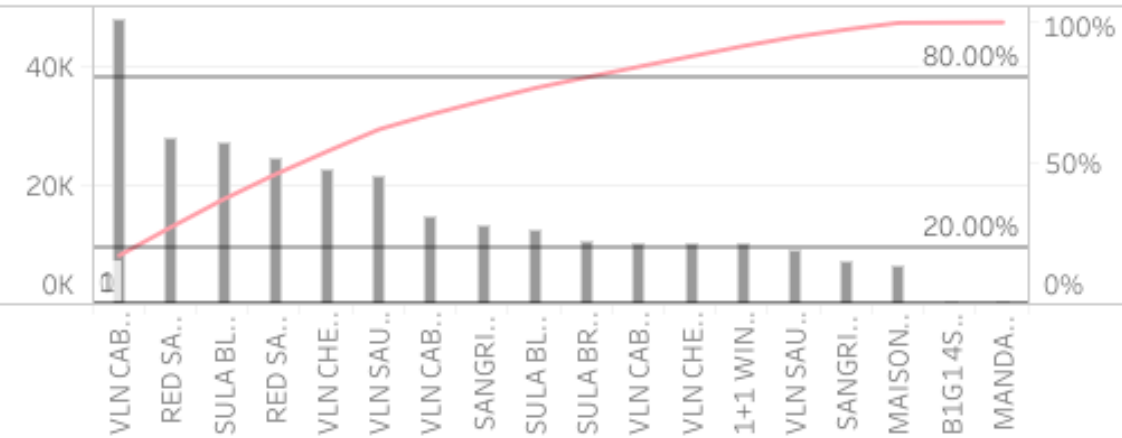
Pareto-Chart7-Tobacco



Top 5 Items that constitute 80% of Sales under TOBACCO -

- MIXED FLAVOUR SINGLE
- NIRVANA HOOKAH SINGLE
- SAMBUCA
- MINT FLAVOUR SINGLE
- CALCUTTA MINT
- NRG HOOKAH

Pareto-Chart8 - Wines

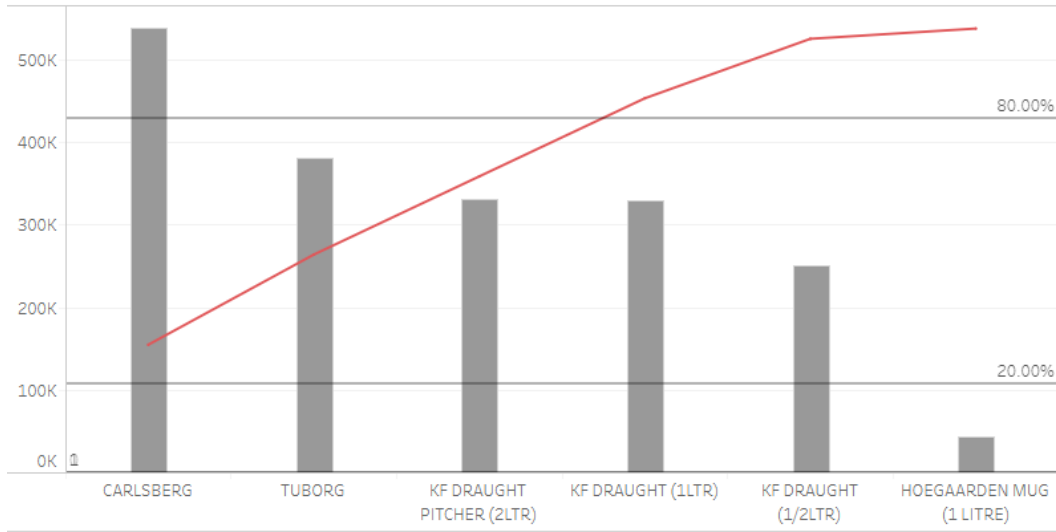


Top 11 Items that constitute 80% of Sales under WINES-

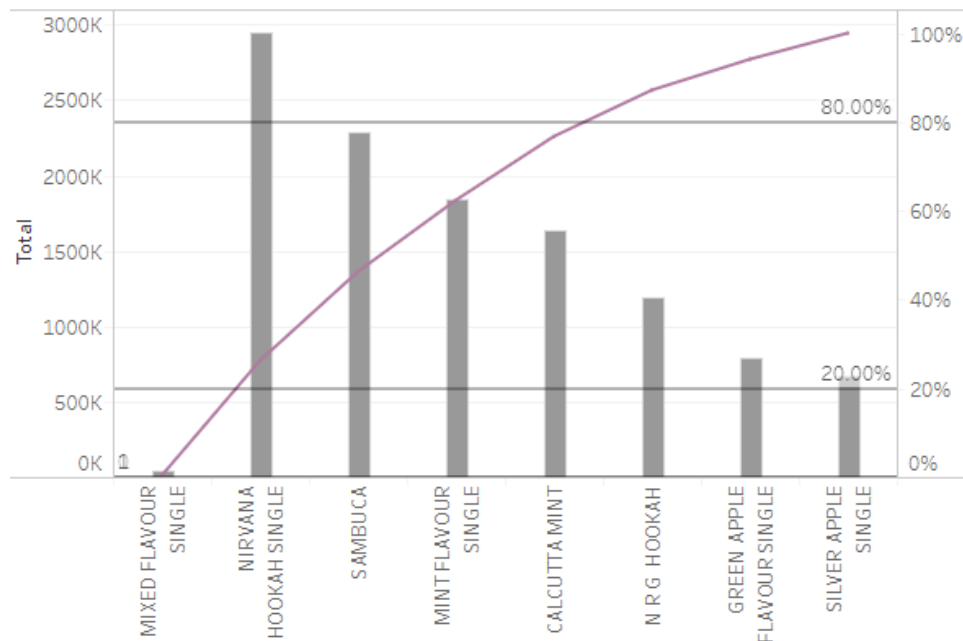
- VLN CAB SAUV (GLS)
- RED SANGRIA (CARAFE)
- SULA BLUSH ZINFADDEL (GLS)
- RED SANGRA
- VLN CHENIN BLANC (GLS)
- VLN SAUV BLANC (GLS)..

Pareto Chart per Category

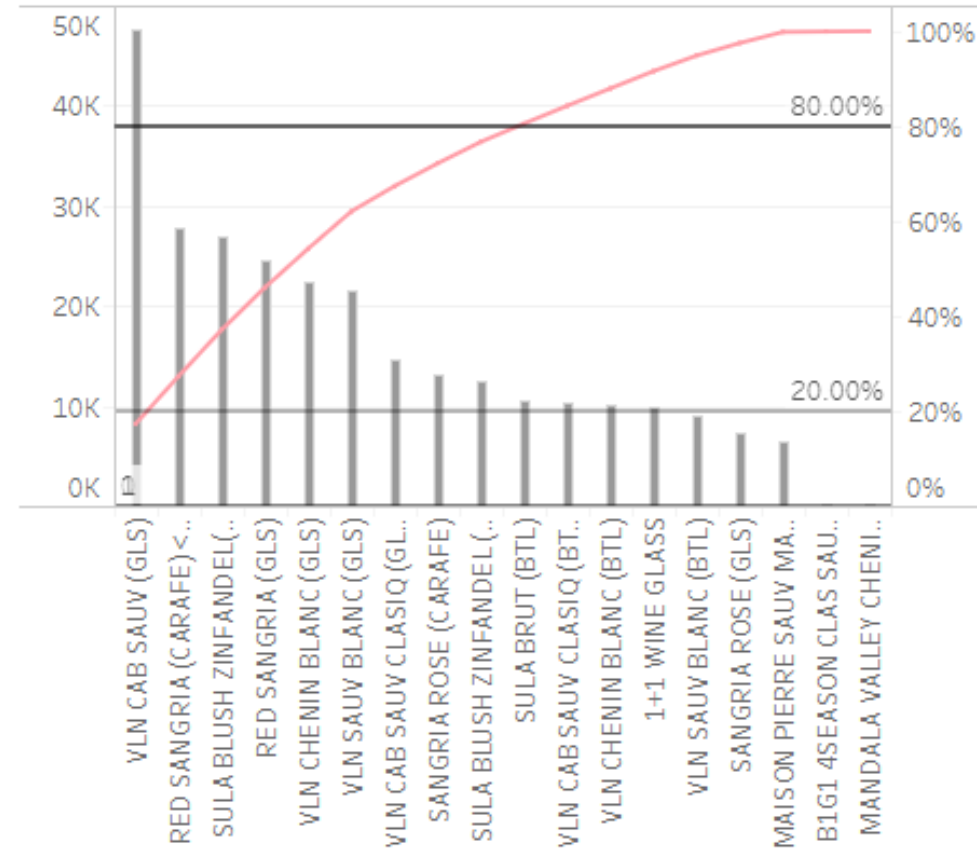
Pareto-Chart3 - Liquor



Pareto-Chart7-Tobacco



Pareto-Chart8 - Wines



Items that can be removed from Liquor, Wine & Tobacco category

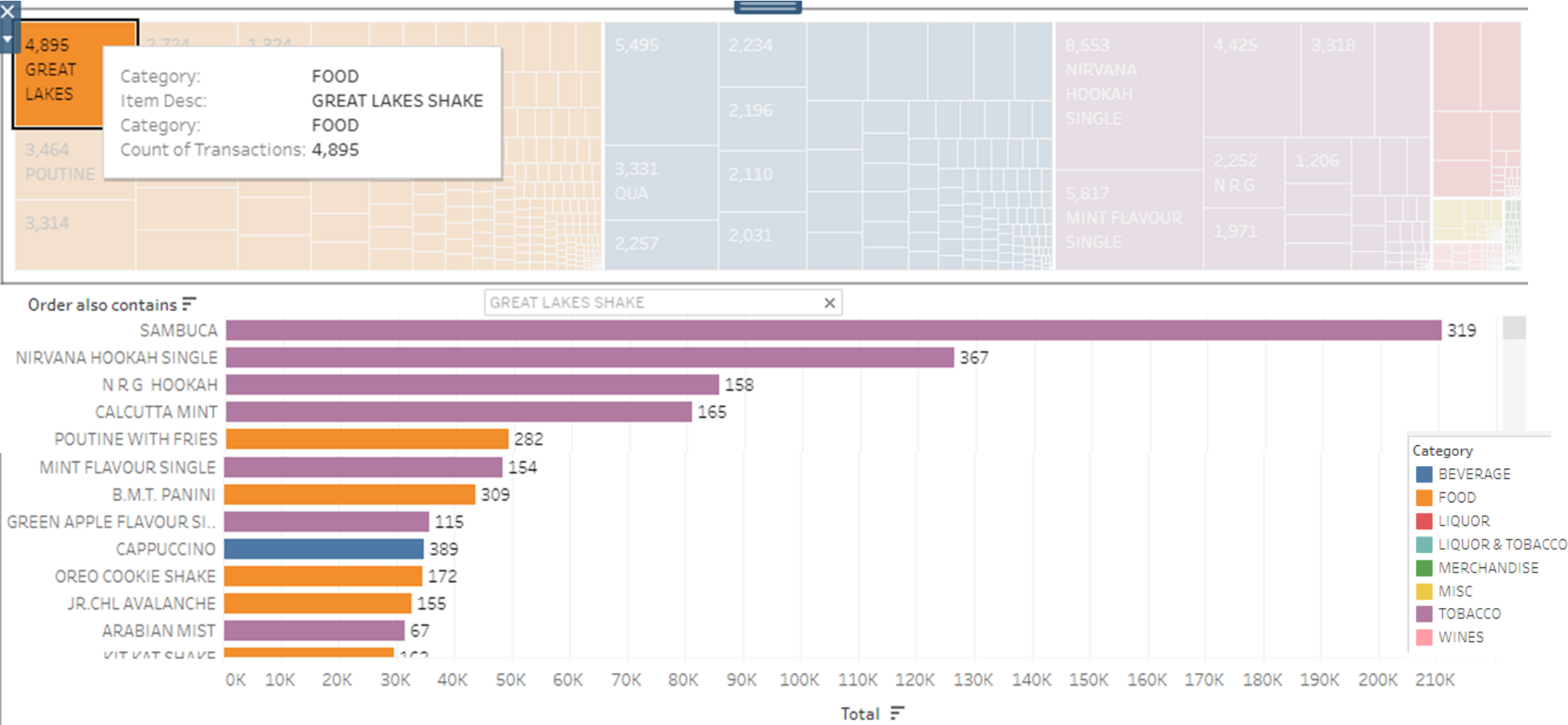
- Hoegaarden Mug (1ltr)
- Silver Apple Single
- Mandala Valley Chenin Blanc
- Big1 4 Season Class Sauu
- Maison Pierre Sauv Marson

Market Basket Analysis

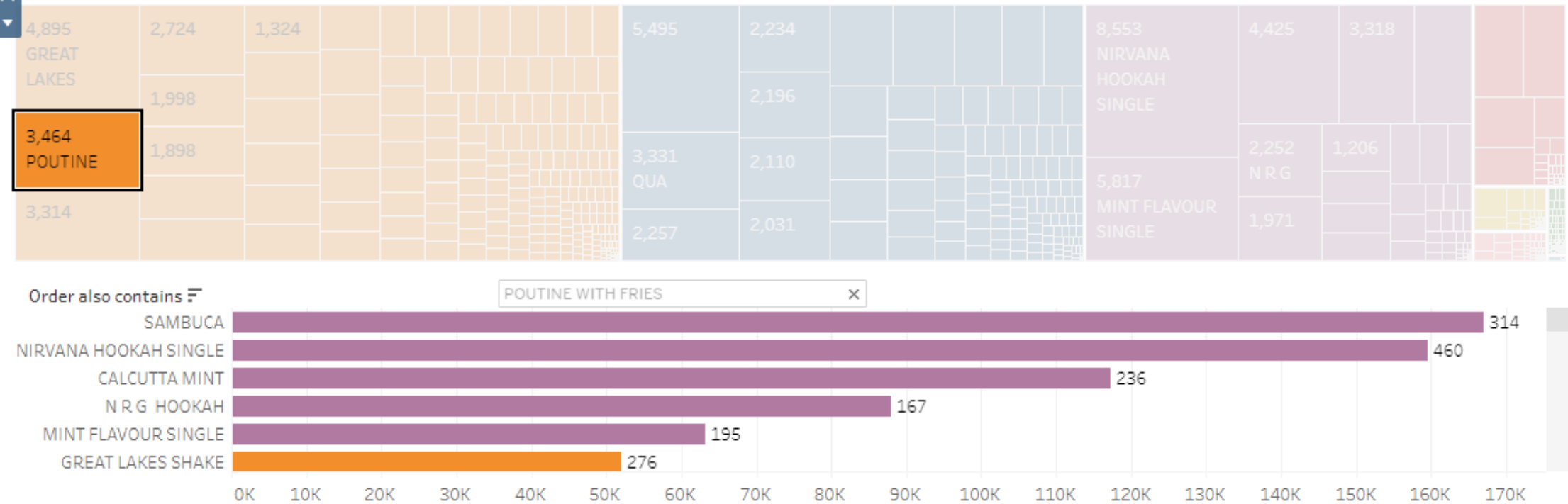
MBA shows what combinations of products most frequently occur together in orders. These relationships can be used to increase profitability through cross-selling, promotions, and providing combo offers on a menu

Combo 1 -[Top selling Food] + [with] + [Less frequently ordered Beverages] + Tobacco

Combo 2 - [Food less frequently ordered, and priced higher] +[with] + [Top selling Beverages and Tobacco]



Market Basket Analysis

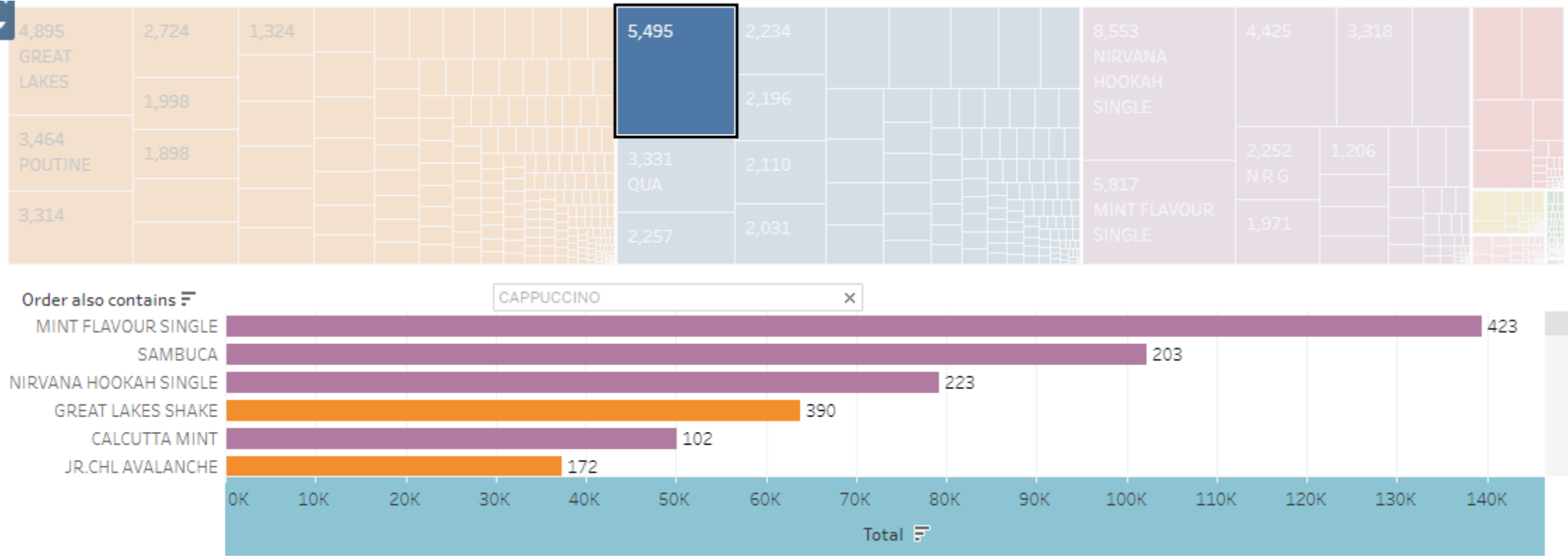


Combo 1 - [Top selling Food] + with + [Less frequently ordered Beverages + Tobacco]

FOOD	BEVERAGE	TOBACCO
<div><div>GREAT LAKES SHAKE283</div><div>B.M.T. PANINI281</div><div>POUTINE WITH FRIES185</div><div>JR.CHL AVALANCHE144</div></div>	<div>PINK LEMONADE IRISH COFFE CHAI LATTE RED BULL ENERGY DRINK</div> <div>BERRY BLAST MIAMI LEMONS BLUE BERRY BRAIN FREEZER SHAKE</div>	<div>ARABIAN MIST MINT FLABOUR SINGLE</div> <div>SILVER APPLE SINGLE THE CHAMPAGNE SHEESHA RED WINE SHEESHA</div>



Market Basket Analysis

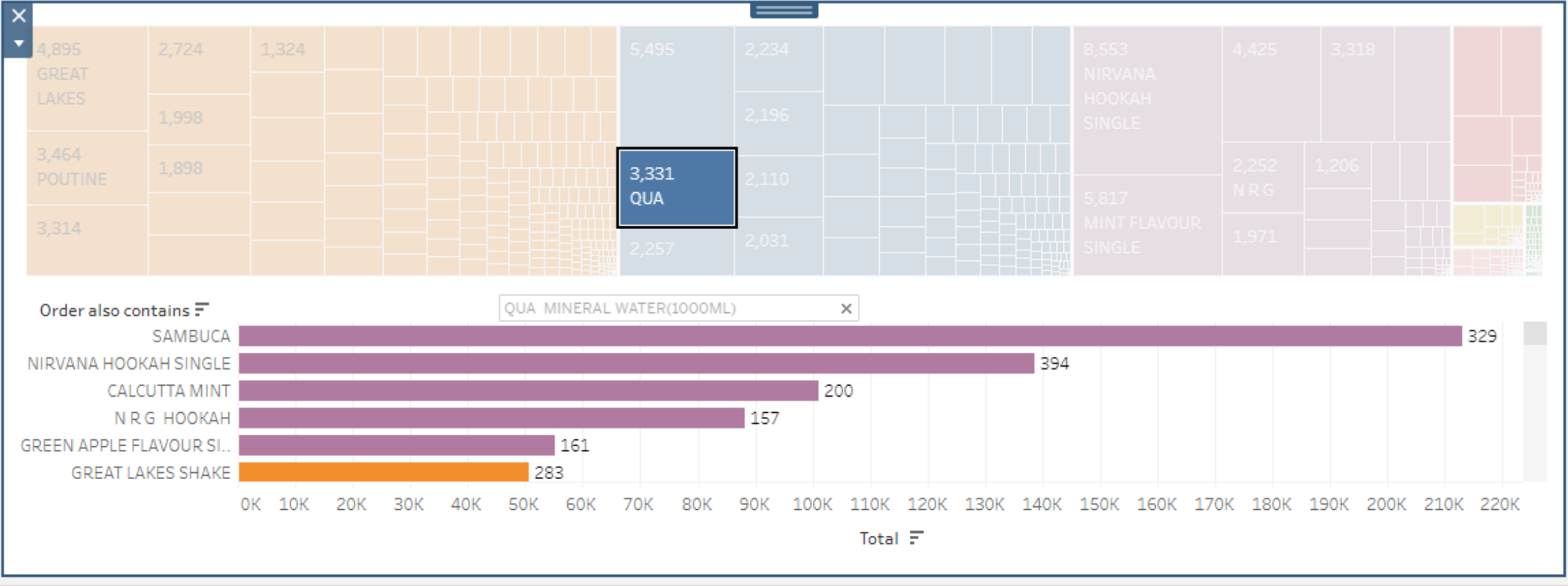


Combo 2 - [Food less frequently ordered, and priced higher] + with + [Top selling Beverages and Tobacco]

FOOD	BEVERAGE	TOBACCO
<div><div>KIT KAT SHAKE88</div><div>LAVA LAVA80</div><div>COUNTRY ROAST CHICKE..103</div><div>THE FERROR ROCHER SHA..58</div><div>COTTAGE CHEESE PANINI110</div></div>	<div>CAPPUCCINO </div> <div>LEMON ICED TEA </div> <div>RED BULL ENERGY DRINK </div> <div>QUA MINERAL WATER 1000 ML</div>	<div>SAMBUCA </div> <div>NIRVANA HOOKAH SINGLE </div> <div>CALCUTTA MINT </div> <div>NRG HOOKAH</div>



Market Basket Analysis

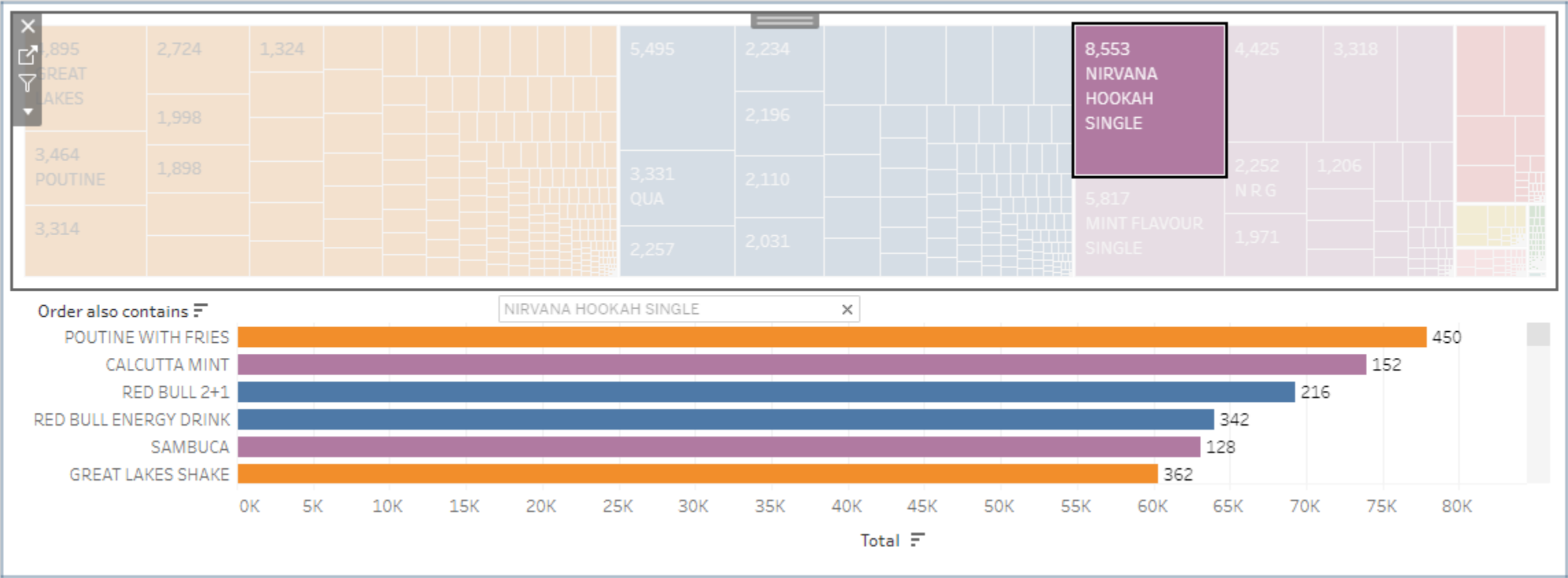


Combo 2 - [Food less frequently ordered, and priced higher] + with + [Top selling Beverages and Tobacco]

FOOD	BEVERAGE	TOBACCO
<div><div>KIT KAT SHAKE88</div><div>LAVA LAVA80</div><div>COUNTRY ROAST CHICKE..103</div><div>THE FERROR ROCHER SHA..58</div><div>COTTAGE CHEESE PANINI110</div></div>	<div>CAPPUCCINO LEMON ICED TEA RED BULL ENERGY DRINK QUA MINERAL WATER 1000 ML</div>	<div>SAMBUCA NIRVANA HOOKAH SINGLE CALCUTTA MINT NRG HOOKAH</div>



Market Basket Analysis

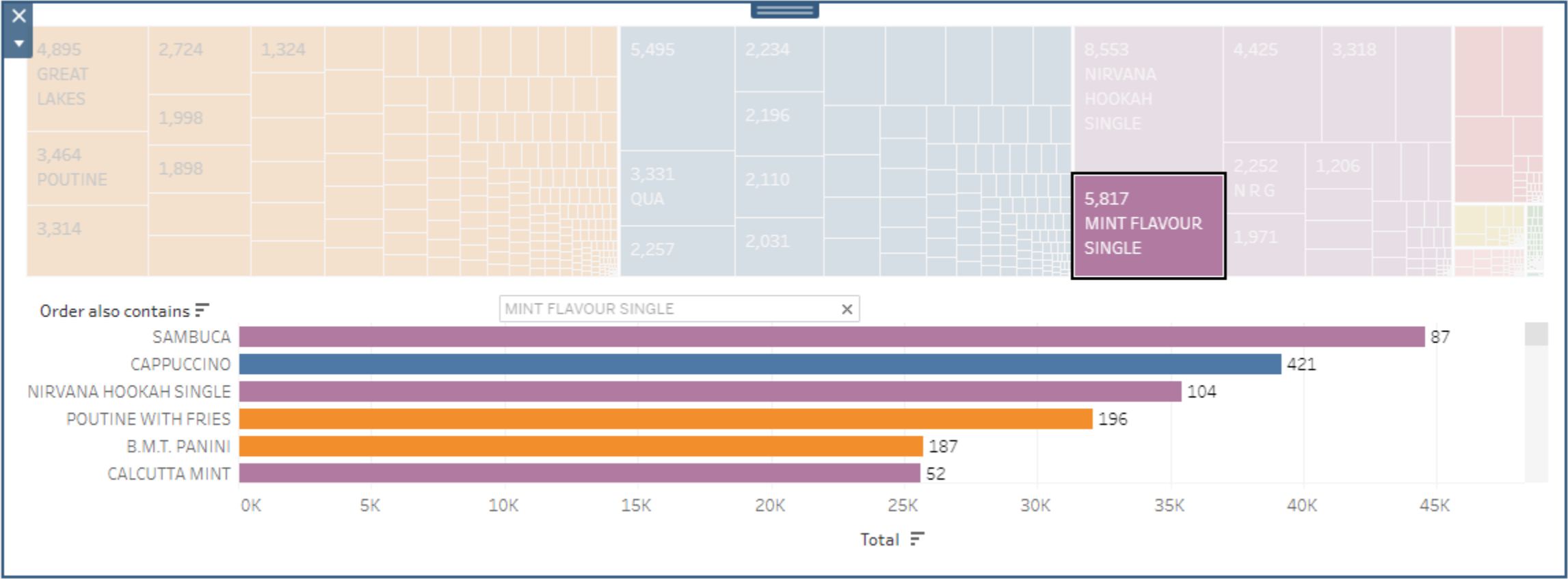


Combo 3 - [Top Selling tobacco] + with + [Liquor]

LIQUOR	TOBACCO
CARLSBERG BUDWEISER TUBORG KF DRAUGHT BEER	SAMBUCA NIRVANA HOOKAH SINGLE CALCUTTA MINT NRG HOOKAH



Market Basket Analysis



Combo 3 - [Top Selling tobacco] + with + [Liquor]

LIQUOR	TOBACCO
CARLSBERG BUDWEISER TUBORG KF DRAUGHT BEER	SAMBUCA NIRVANA HOOKAH SINGLE CALCUTTA MINT NRG HOOKAH

Category

BEVERAGE

FOOD

LIQUOR

LIQUOR & TOBACCO

MERCHANDISE

MISC

TOBACCO

WINES