

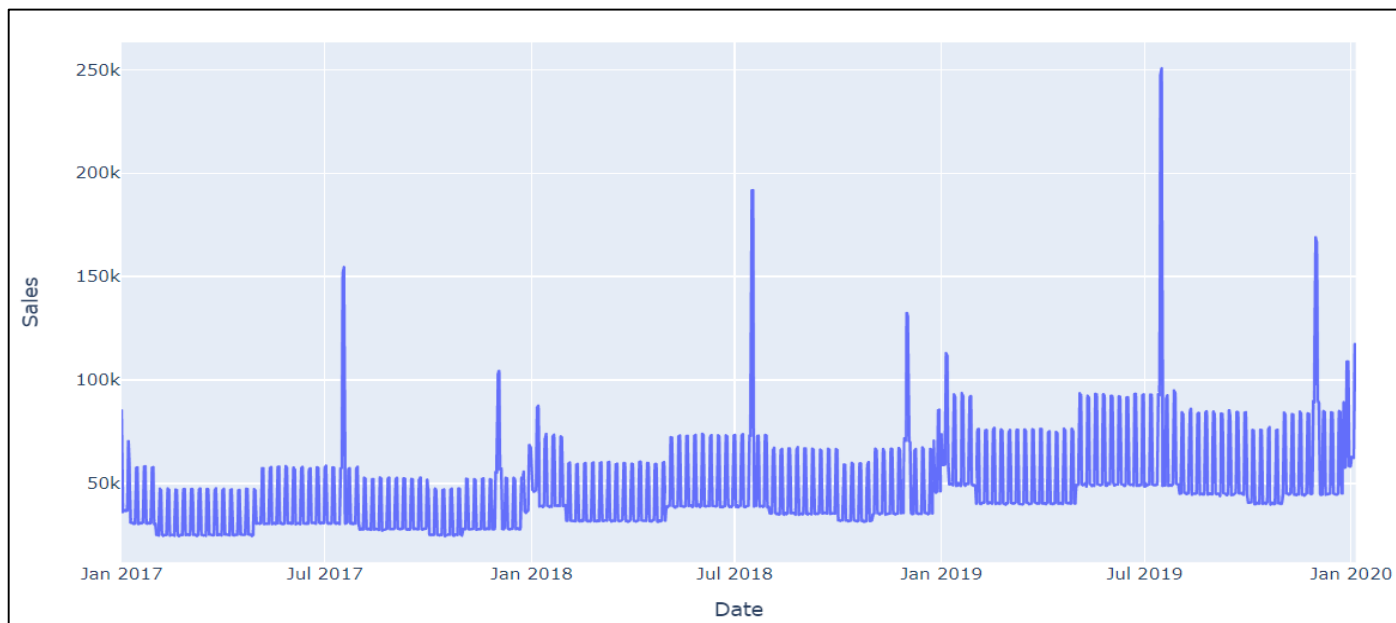


CommercelQ Case Study

Case Study: Conglomerate Inc operates multiple brands under its umbrella that ranges from servicing Baby, Food & Beverages and Electronics items. They are looking to run promotional campaigns on Amazon and want to understand the effect of price elasticity for their categories. They have decided to run a pilot with CommercelQ for three categories, diapers, breakfast cereals and headphones to understand their promotional strategy better.

ABDUL WAHAB

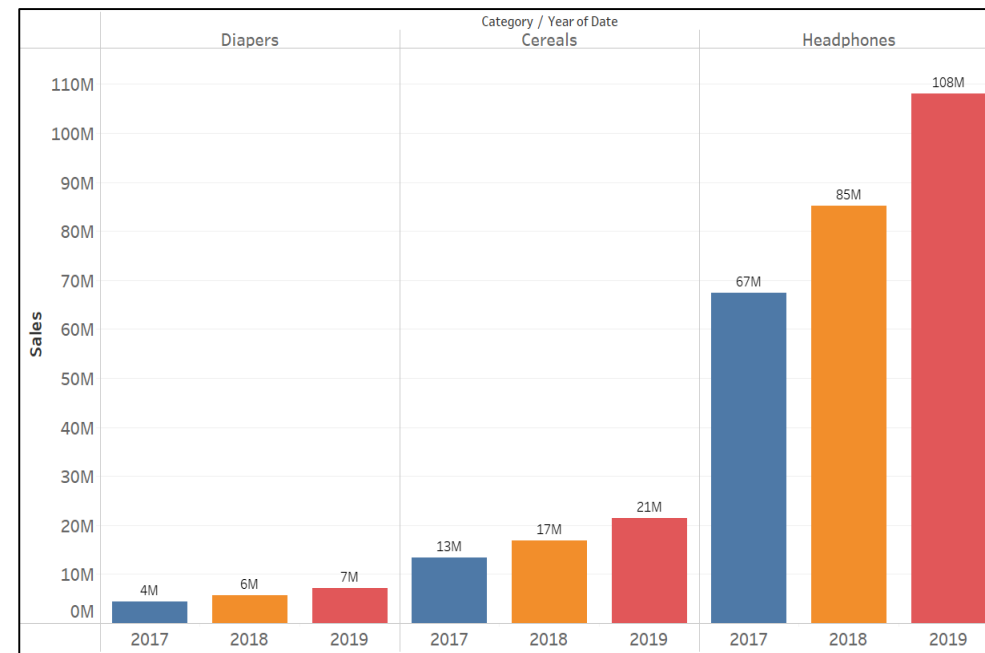
What is the reason for the sudden spike in sales at repeated intervals?



Trend and Sudden spikes

Overall there is an increasing trend in Sales for each of the product

- During the analysis of sales data, it was observed that there is a consistent and noteworthy spike in sales during the period of July 15-17 each year. This particular surge can be directly linked to Amazon Prime Day, an event known for its significant impact on sales.
- Another prominent spike occurs during December 1-3, which can be attributed to the commencement of Christmas sale offers.
- First week of January also experiences an increase in sales, which can be attributed to the extension of New Year sales.

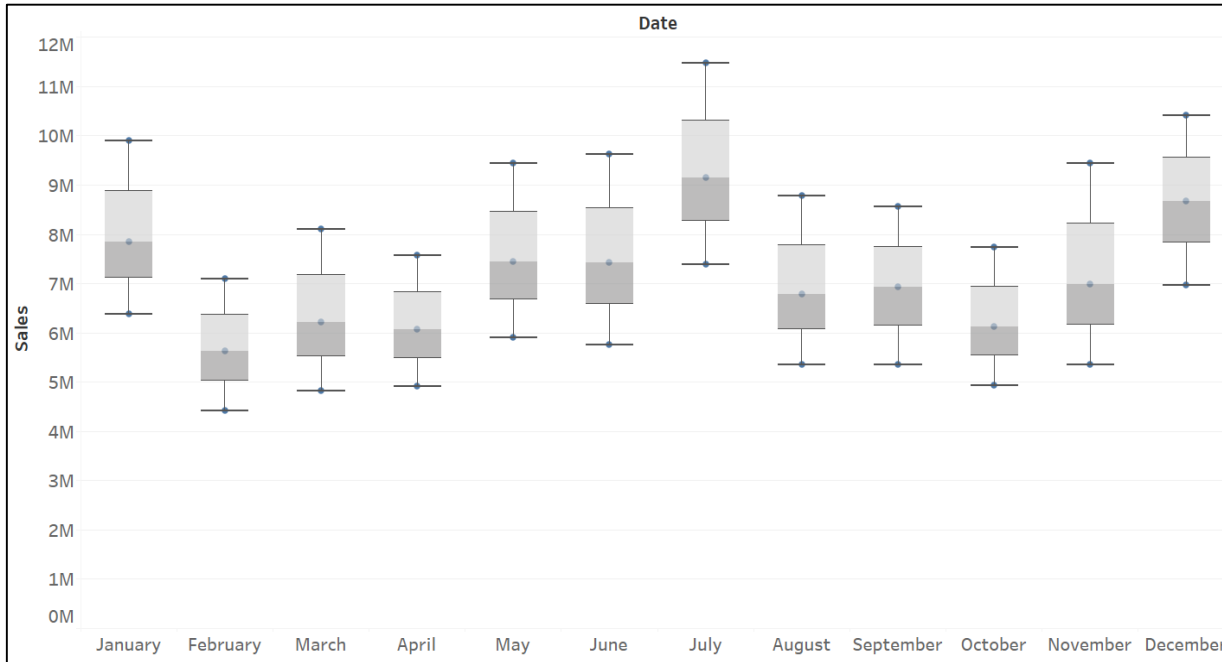


Overall Growth

- The headphone segment has experienced a remarkable growth rate, expanding by nearly 1.5 times within a span of two years.
- However, the highest growth has been observed in the diapers category.

Price distribution in one of the best revenue provider

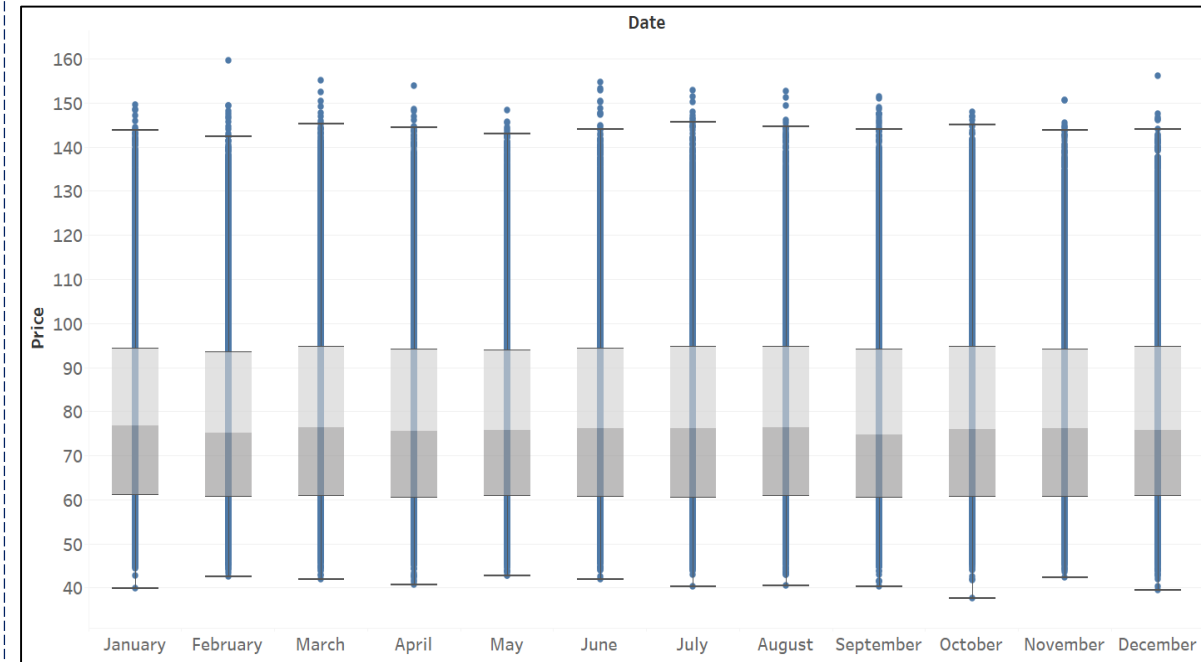
Category : Headphones



Sales

- July seems to be month with highest sales due to Prime Day Event
- January and December also exhibit commendable sales performance
- It is noteworthy that the promotional offer periods are strategically aligned with the lifespan of the headphones, thereby ensuring an effective sales cycle.

Assumption : Lifetime of Headphones can be taken as 6 months/1 year



Pricing

- The pricing range exhibits minimal variation throughout.
- In order to develop an effective promotional strategy, it is necessary to conduct a thorough analysis of the sales volume associated with each price point.

SKUs in each category into top selling, core and tail subcategories

ABC Analysis

	abc_class	total_skus	total_units	total_revenue
0	A	46	1310992	13836502.74
1	B	27	230881	1761970.19
2	C	27	227559	1745841.51

Diapers

- Class A, comprising 46 entities, contributes 80% of our total revenue.
- Class B, consisting of 27 entities, accounts for the subsequent 10% of revenue.
- Class C, with a significant number of 27 entities, generates the remaining 10% of sales

	abc_class	total_skus	total_units	total_revenue
0	A	45	2093282	2.085561e+08
1	B	37	441751	2.592184e+07
2	C	38	448452	2.640062e+07

Headphones

- Class A, comprising 45 entities, contributes 80% of our total revenue.
- Class B, consisting of 37 entities, accounts for the subsequent 10% of revenue.
- Class C, with a significant number of 38 entities, generates the remaining 10% of sales

SKUs in each category into top selling, core and tail subcategories

ABC-XYZ Analysis

	abc_xyz_class	total_skus	total_demand	avg_demand	total_revenue
1	AY	31	915911	2462.126344	9795653.89
0	AX	11	318798	2415.136364	3329370.36
2	AZ	4	76283	1589.229167	711478.49
5	BZ	10	85655	713.791667	652711.13
7	CY	10	84438	703.650000	647057.41
6	CX	10	84152	701.266667	646248.65
3	BX	9	76888	711.925926	586999.95
4	BY	8	68338	711.854167	522259.11
8	CZ	7	58969	702.011905	452535.45

Given that all coefficient of variation values lie below 1, it can be inferred that the boundaries of XYZ are not strictly ensuring their distinctiveness.

AX

- High value
- Steady demand
- Easy to forecast
- Easy to manage

BX

- Medium value
- Steady demand
- Easy to forecast
- Easy to manage

CX

- Low value
- Steady demand
- Easy to forecast
- Easy to manage

AY

- High value
- Variable demand
- Harder to forecast
- Harder to manage

BY

- Medium value
- Variable demand
- Harder to forecast
- Harder to manage

CY

- Low value
- Variable demand
- Harder to forecast
- Harder to manage

AZ

- High value
- Sporadic demand
- Difficult to forecast
- Difficult to manage

BZ

- Medium value
- Sporadic demand
- Difficult to forecast
- Difficult to manage

CZ

- Low value
- Sporadic demand
- Difficult to forecast
- Difficult to manage

How is the price distributed in each of these categories

	Categories	Assortment	Pricing	GTM
Top selling	AZ, AY, AX	Broad Differentiated Offer	Margin Price leader with multiple price points. Pricing optimization required.	High focus and capability to fulfill increased demands during instances of surges.
Core	AX, BX, BY,CX	Enough selection to meet the needs	Price leader with limited or no tiers	Moderate focus on categories that drive value
Tail	BZ,CY, CZ	Limited selection to meet the needs	Limited price tiers	Lower internal concentration and focus

Which category is getting more expensive?

Category : Headphones

Category	Avg. Price			% Difference in Units Sold from ..		
	2017	2018	2019	2017	2018	2019
Cereals	10.00	10.00	10.00	0.00%	26.66%	26.74%
Diapers	8.80	8.80	8.80	0.00%	26.56%	26.70%
Headphones	71.00	71.03	71.00	0.00%	26.24%	26.62%

- Average price has remained the same for Cereals, Headphones and Diapers throughout the period.
- The persistent demand for headphones indicates a potential opportunity for a price hike to extract more revenue.

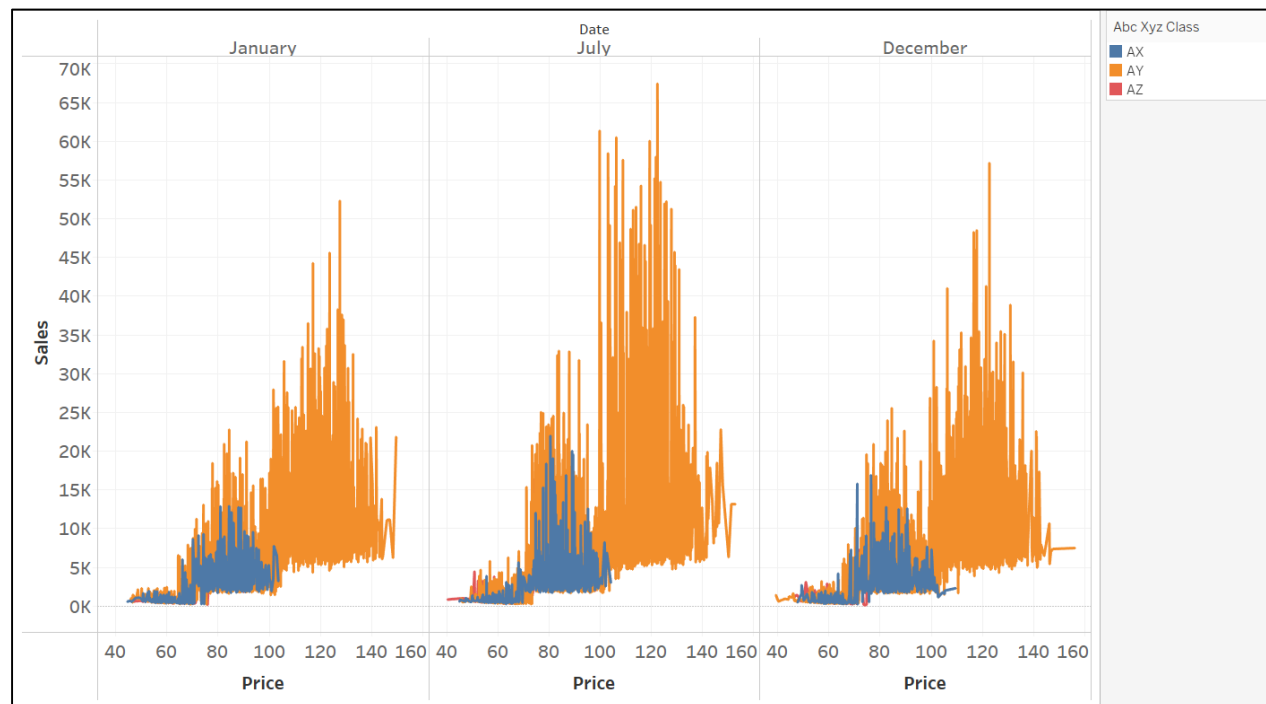
Abc Class	Abc Xyz ..	Avg. Price			% Difference in Units Sold from ..			% Difference in Sales from the ..		
		2017	2018	2019	2017	2018	2019	2017	2018	2019
A	AX	77.84	77.87	77.82	0.00%	25.77%	26.72%	0.00%	26.00%	26.71%
	AY	93.41	93.45	93.38	0.00%	26.37%	26.68%	0.00%	26.33%	26.60%
	AZ	68.22	68.01	68.12	0.00%	27.54%	26.75%	0.00%	27.47%	26.76%
B	BX	59.94	59.99	59.90	0.00%	24.69%	26.51%	0.00%	24.99%	26.46%
	BY	59.92	59.91	59.95	0.00%	26.44%	26.43%	0.00%	26.58%	26.55%
	BZ	60.07	59.99	59.87	0.00%	26.58%	27.04%	0.00%	26.36%	26.87%
C	CX	59.92	60.09	60.18	0.00%	25.23%	25.77%	0.00%	25.61%	25.95%
	CY	60.13	60.12	60.16	0.00%	27.04%	26.74%	0.00%	27.03%	26.72%
	CZ	60.12	60.24	60.09	0.00%	25.16%	26.46%	0.00%	25.56%	26.52%

- Highest YOY growth 26.87% was seen on BZ Category which has seen a price decline
- 2018 marked good growth in Sales with slight increase in price for some categories.

Determine an optimum pricing mechanism to extract more revenue

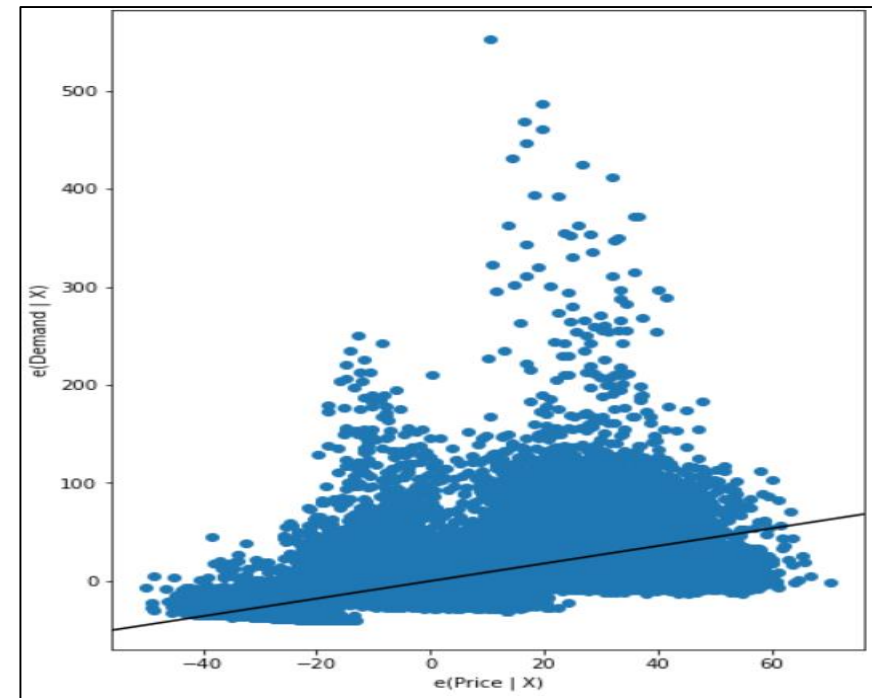
Category : Headphones

Bundle: AX,AY,AZ



- Two approximately normal distributions can define the price range of customers
- The demand for headphones during promotional periods appears to exhibit a high and erratic pattern.
- The majority of customers tend to favor two specific price ranges, namely 70-90 and 110-130.

Assumptions: Linearity assumption during regression fit
There is no cannibalization

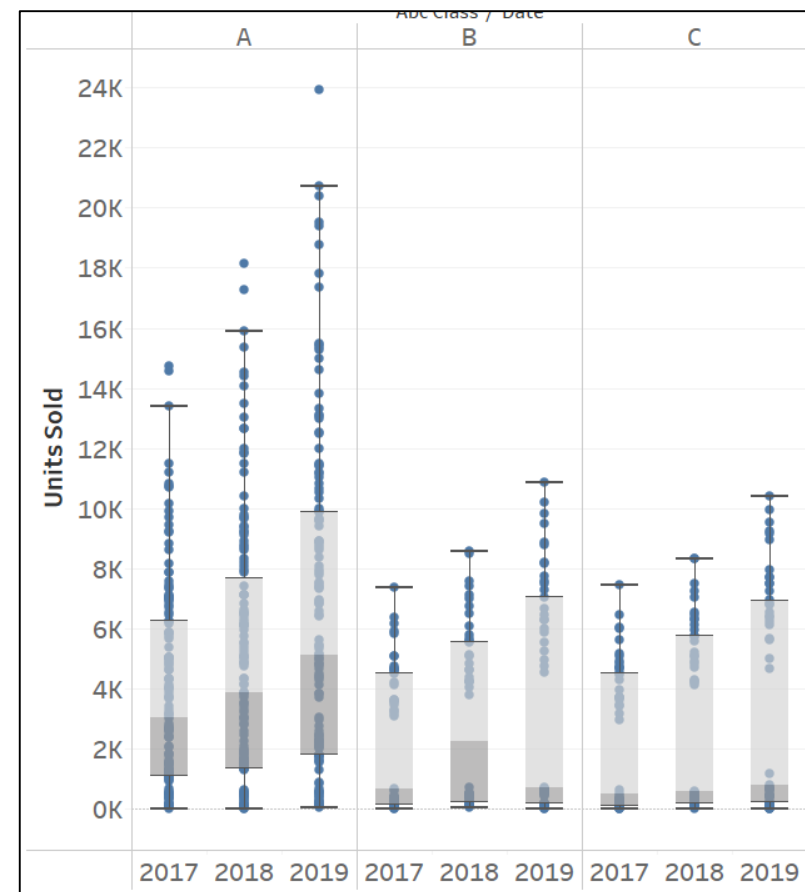
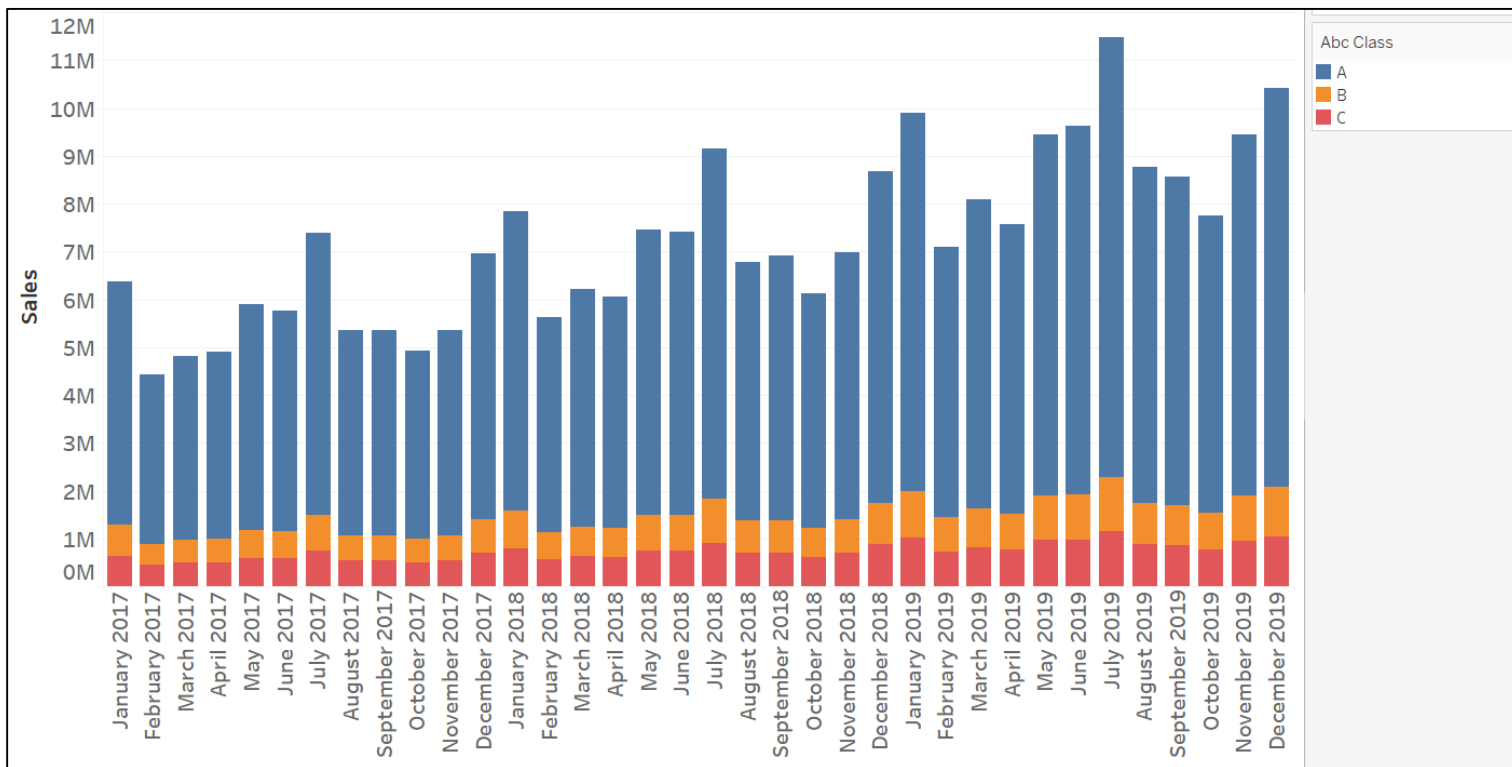


1. The demand-price curve reveals that certain customers exhibit a propensity to purchase products despite their elevated prices.
2. The calculated p -value for the fit was determined to be lower than 0.05, indicating that price has a statistically significant effect, albeit with a small magnitude.
3. In the context of these specific products, price sensitivity is comparatively low.

What other data would be useful to help your client develop a promotional strategy, and how would you use this data

Transaction data of the Customers can be used to make Personalized offers and make

- **Cross-Selling Opportunities:** Analyzing product codes and sales data together can reveal patterns of products frequently purchased together. This information can be used for cross-selling and bundling strategies, improving customer experience and increasing revenue by suggesting complementary products.
- **Price Optimization:** By analyzing the relationship between price and sales, you can identify optimal price points that maximize revenue and profitability. This analysis helps in pricing decisions, promotional strategies, and discount planning.
- **Demand Forecasting:** Analyzing historical sales data can be used for demand forecasting, enabling businesses to anticipate future sales volumes and adjust production and inventory levels accordingly. This helps optimize supply chain management, prevent stockouts, and reduce excess inventory costs.



EDA performed on Tableau

- https://public.tableau.com/views/ciq2/Sheet2?:language=en-GB&publish=yes&:display_count=n&:origin=viz_share_link
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