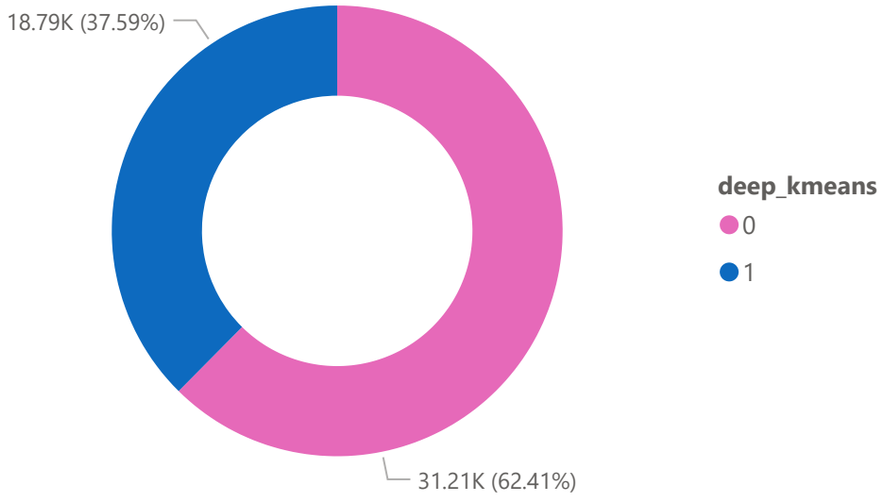
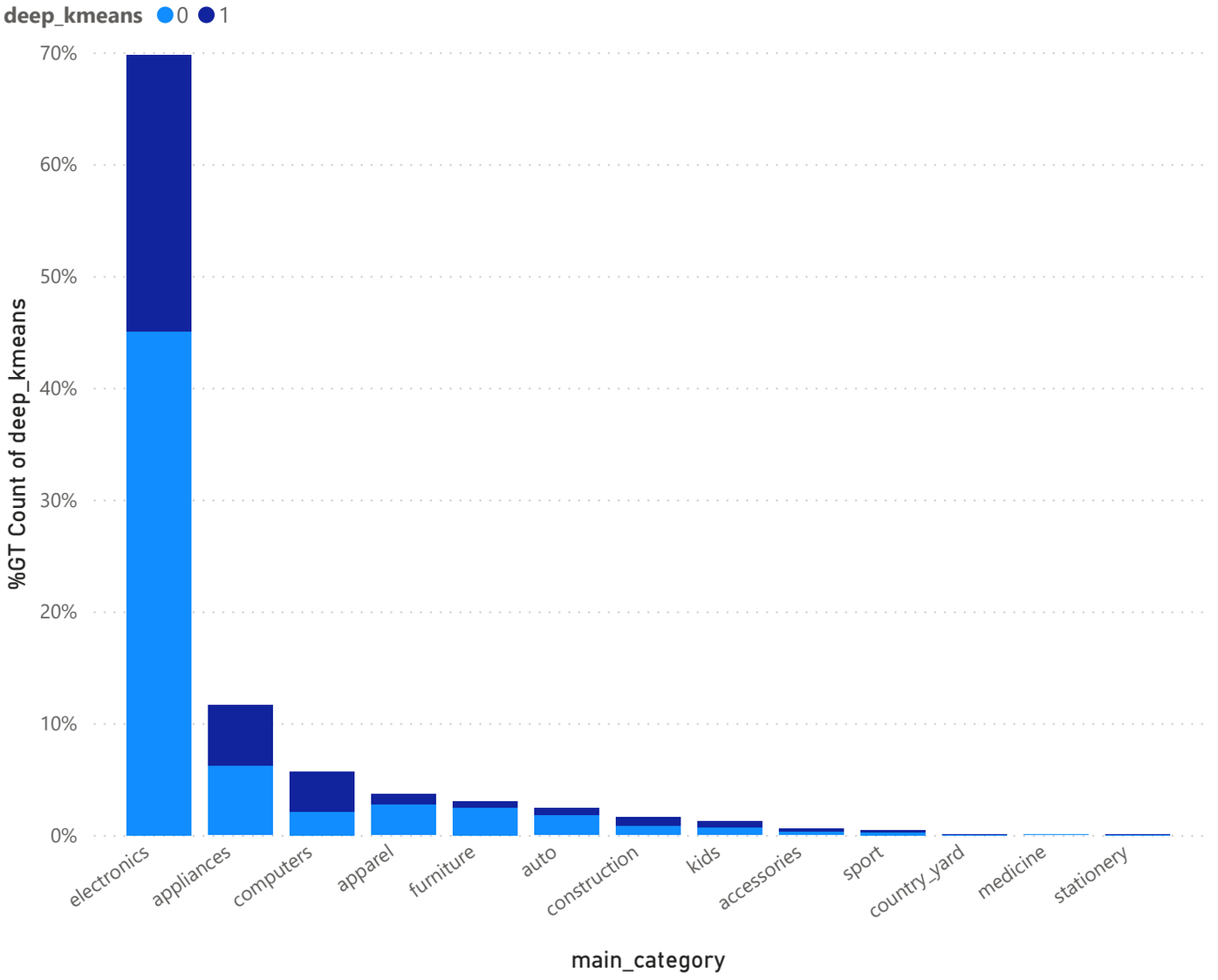
Cluster Distribution by Deep K-Means



Exploring Cluster Preferences:

An Overview of Main Categories of Interests



Th Stacked Column Chart/Barchart Shows the Cluster Distribution along with their top product category preferences.

Interpretation:

• Cluster Dominance: The larger size of Cluster ‘1’ suggests that it represents the dominant segment within the dataset. This implies that a majority of the data points share a set of characteristics or behaviors that are distinct from those in the smaller Cluster ‘0’. We can say that Cluster ‘1’ represent the most common customer profile.

• Category Preferences:The significant preference for ‘electronics’ in the bar chart indicates that this category is particularly important to the clusters. ‘Electronics’ is the most popular or sought-after category among the customer base. It might also suggest that ‘electronics’ has a wide appeal across different types of customers.

Targeted Strategies:

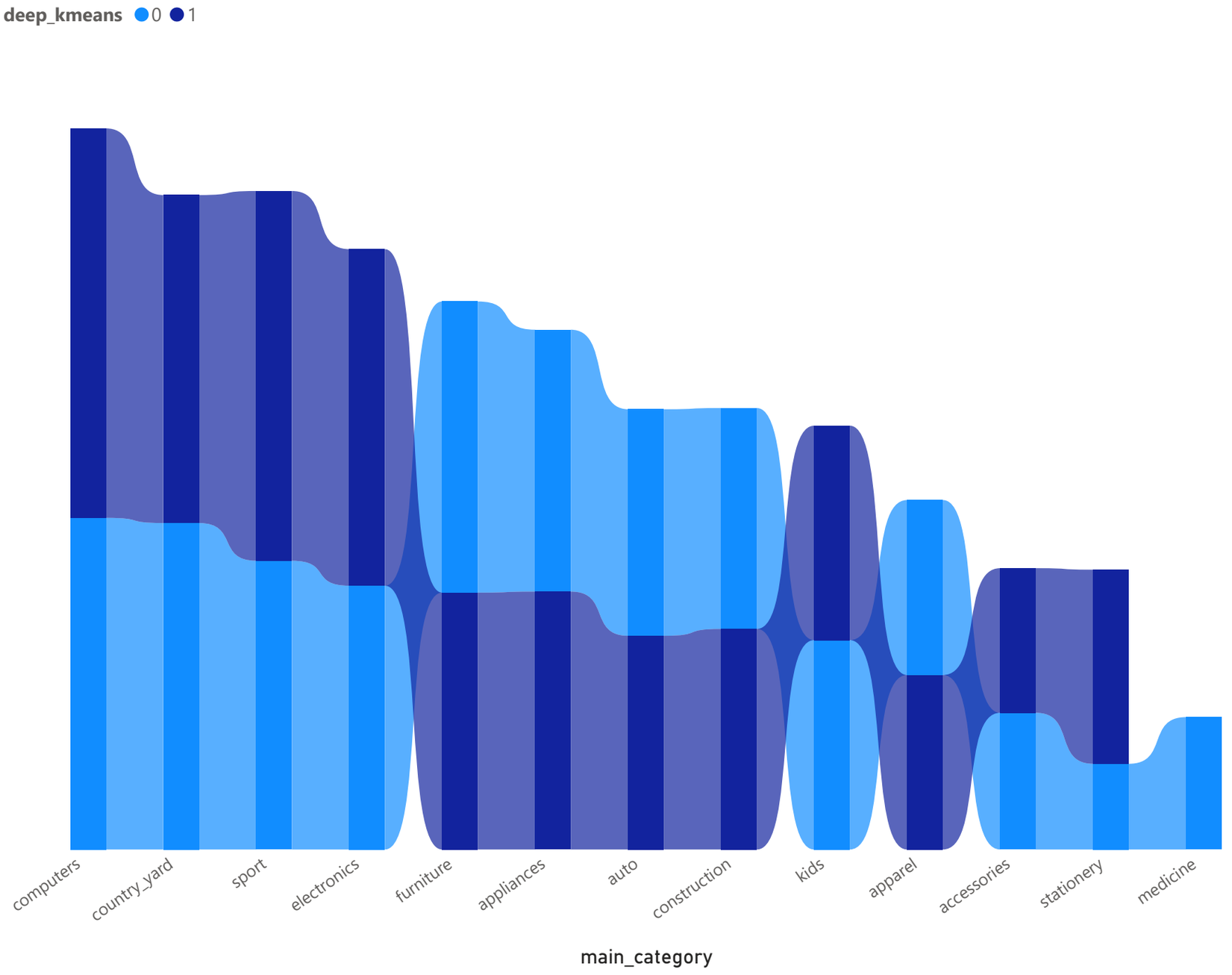
• Understanding that ‘electronics’ is a key category for both clusters, businesses can develop targeted marketing campaigns, tailor their product offerings, or create customized promotions to cater to this interest.

• The lower bars for categories like ‘medicine’, ‘gourmet’, and ‘stationery’ suggest these are niche areas. Businesses might need to either look for opportunities to grow these categories or prioritize them lower in strategic planning.

Average Price by Category: The average price by main category analysis indicated that Cluster 1 has a higher average spending across most categories compared to Cluster 0, with the most significant divergence in the ‘stationery’ category, where Cluster 1’s average price was substantially higher. This suggests that Cluster 1 contains customers who may be less price-sensitive and potentially more quality-oriented, willing to spend more on certain products.

The Below Ribbon chart representing the average cart prices for the user sessions across clusters

Average of price by main_category and deep_kmeans

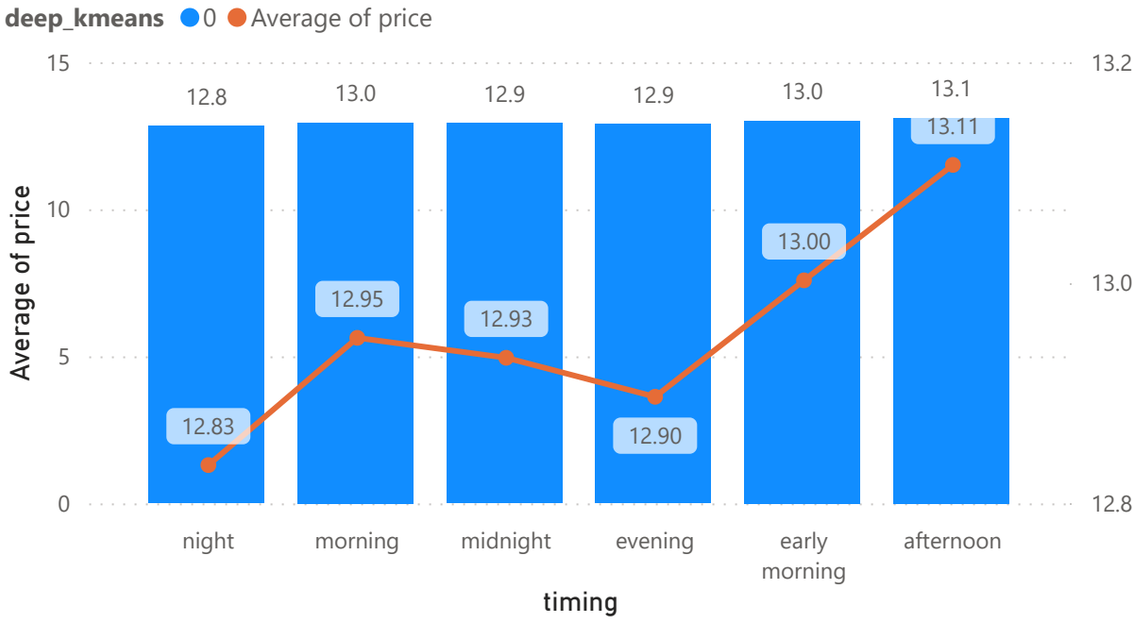


computers in deep_kmeans 1 made up 6.44% of Average of price.

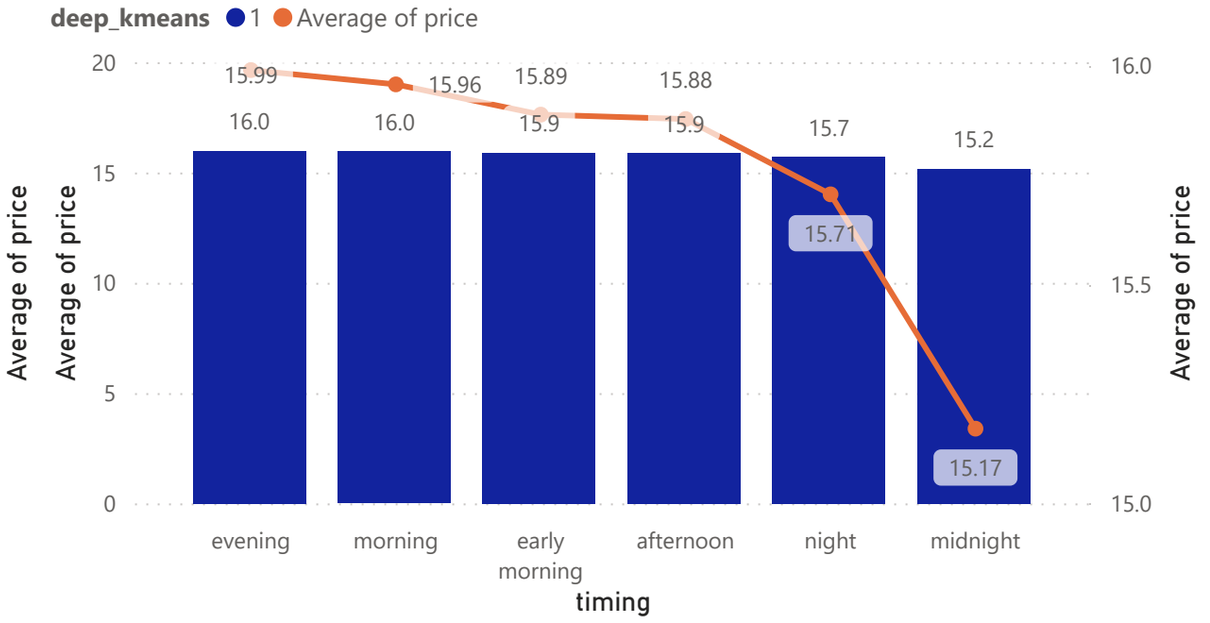
Average Average of price was higher for 1 (12.89) than 0 (11.33).

Average of price for 1 and 0 diverged the most when the main_category was stationery, when 1 were 5.41 higher than 0.

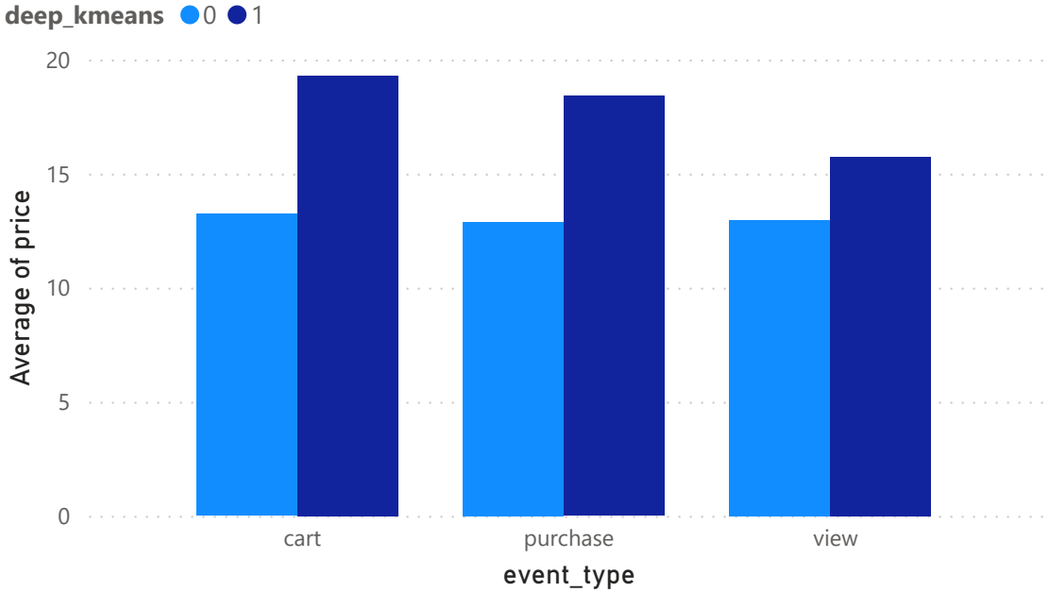
Average of price and Average of price by timing and deep_kmeans



Average session cart pricing among the cluster 1 across various timings in a day



Average of price by event_type and deep_kmeans



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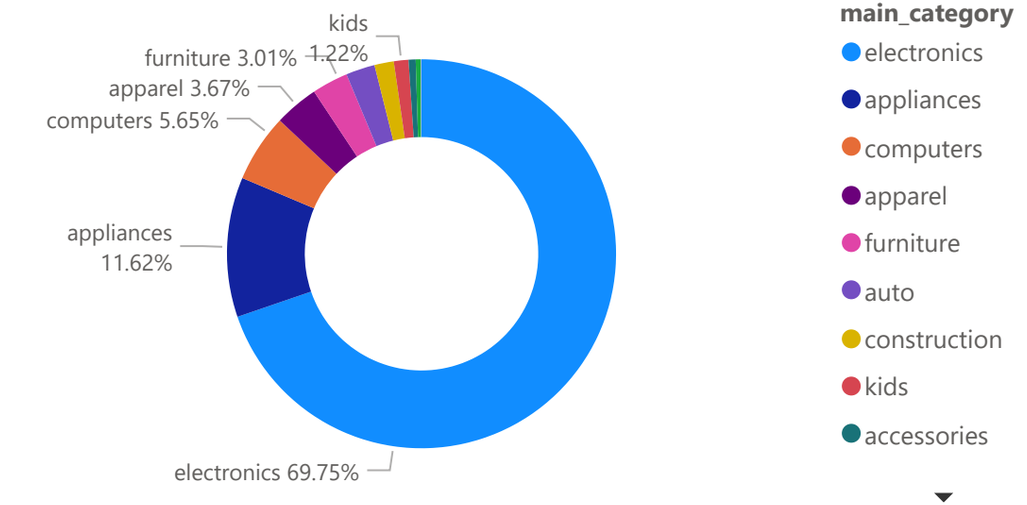


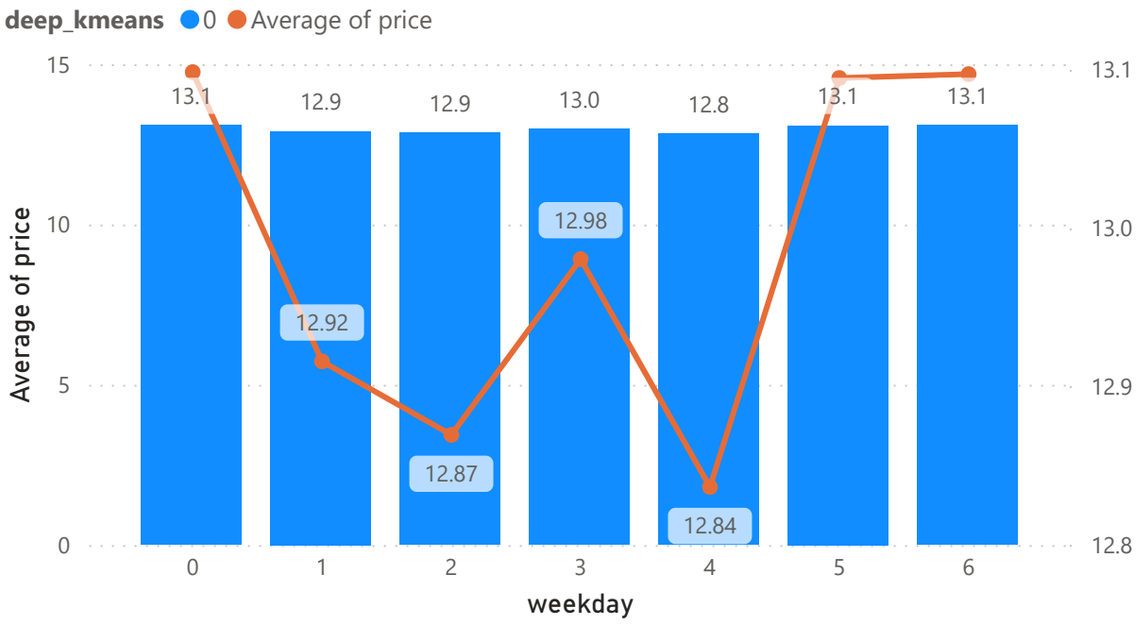
Price Dynamics: We also examined price dynamics within each cluster, finding that Cluster 1 customers typically engage in higher-value transactions throughout the day, with peak average prices in the early morning. In contrast, Cluster 0 shows more consistent spending habits across different times of the day. This temporal pattern of spending could inform time-specific marketing strategies, such as flash sales or timed promotions to maximize revenue from each segment.

Weekly Trends: The weekly trends in session cart pricing further support the hypothesis that Cluster 1 customers are high spenders, particularly on weekends, indicating a possible correlation between leisure time and shopping activity.
In contrast, Cluster 0's spending does not exhibit significant fluctuations throughout the week, suggesting a more consistent purchasing behavior.

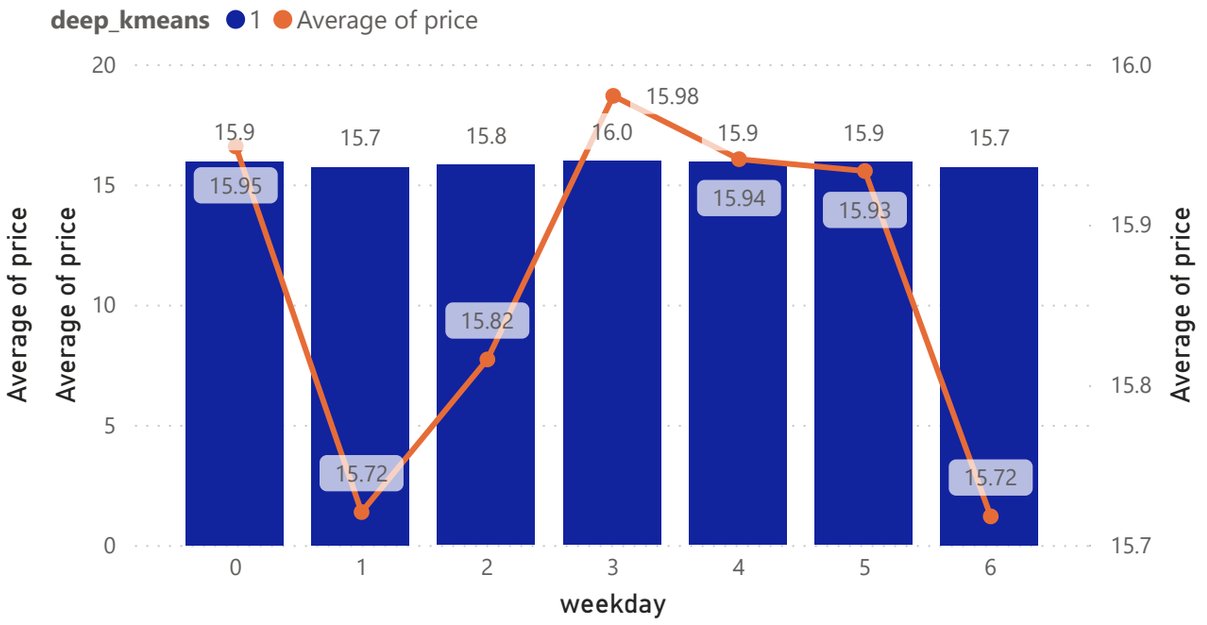
During the midweek, cluster 1, who are status buyers showed much interest in purchasing the electronics. Whereas, cluster 0 customers typically showed interest in buying the electronics during the weekends, when the companies must have come up with special offers and sale campaigns.

Insights into Price Variations by Event Type: The analysis of price variations by event type—such as adding to cart, purchase, and view—shows that Cluster 1 customers tend to add higher-priced items to their carts and proceed to purchase them, whereas Cluster 0 customers exhibit more priceconscious behavior, with lower average prices for viewed and added items.
When we did a deep analysis of the cluster 1 price dynamics across the various timings of the day regarding their user sessions, the cluster 1 customers exhibited higher purchase patterns during the night. Stats show that 80% of customers in cluster 1 were interested in purchasing electronics with peak purchases during the night

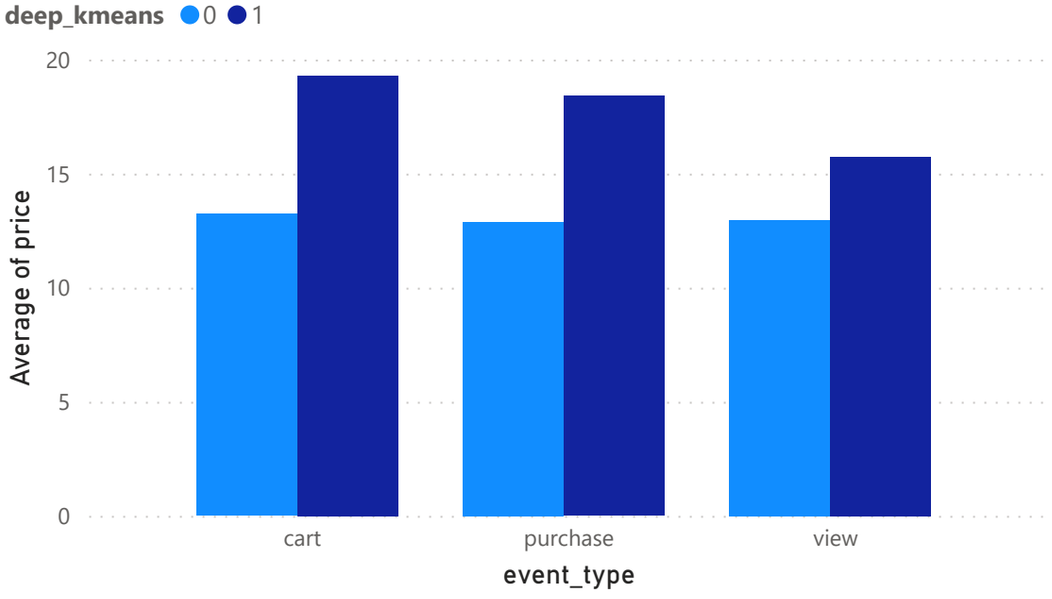
Average session cart pricing among the cluster 0 along the week



Average session cart pricing among the cluster 1 along the week



Average of price by event_type and deep_kmeans



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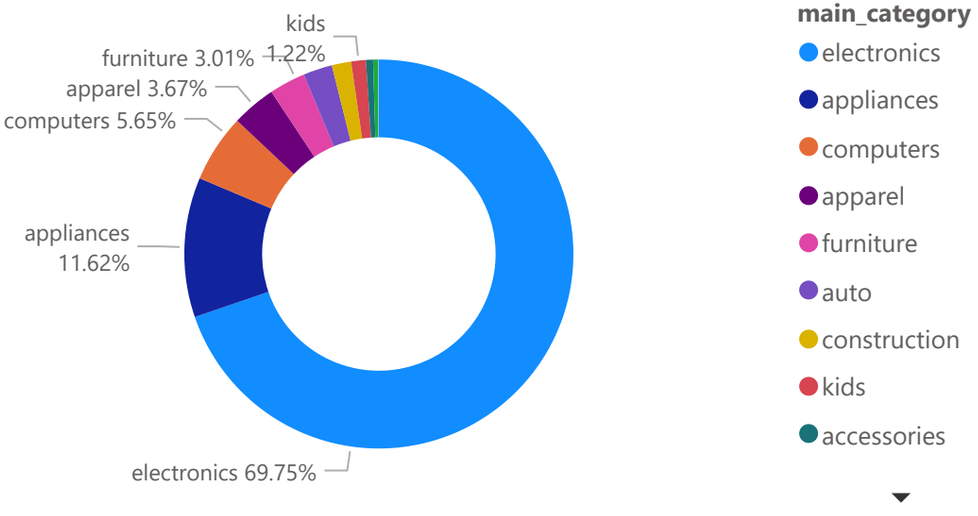

Strategic Recommendations: Based on these insights, we propose the following strategies:

• Dynamic Pricing and Promotions: Implement dynamic pricing strategies for Cluster 1, taking advantage of their willingness to pay more, especially during early morning hours and weekends. For Cluster 0, consider value deals and discounts to stimulate purchasing.
• Personalized Engagement: Tailor marketing communications to the observed behavior patterns, with Cluster 1 receiving premium product promotions and Cluster 0 being targeted with cost-effective options.
• Inventory Management: Align stock levels with the high-demand categories and price points favored by each cluster, ensuring product availability that matches their spending habits.
• Temporal Marketing Tactics: Leverage the insights from time-based spending patterns to time marketing campaigns, such as early morning email blasts for Cluster 1 and consistent engagement throughout the week for Cluster 0.
• Customer Retention Strategies: Develop loyalty programs for Cluster 1 to reward their higher spending and create incentives for Cluster 0 to increase their transaction values.