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**Electric Vehicle (EV) Analysis Report**

## Conclusion

The analysis of customer segments based on clustering has provided valuable insights into the behavior and purchasing power of different groups. The segmentation indicates that there are four distinct customer clusters with varying demographics, income levels, and EV purchasing tendencies. These clusters have been analyzed based on factors such as age, total salary, EV price preference, and number of dependents. The revenue potential for each segment has also been evaluated to identify the most profitable customer base. Based on the results, Cluster 3 emerges as the most financially capable group, showing a higher salary and preference for premium EV models. Conversely, Cluster 2 represents a lower-income segment with limited purchasing power. Understanding these segments allows for targeted marketing strategies to enhance EV sales and customer engagement.

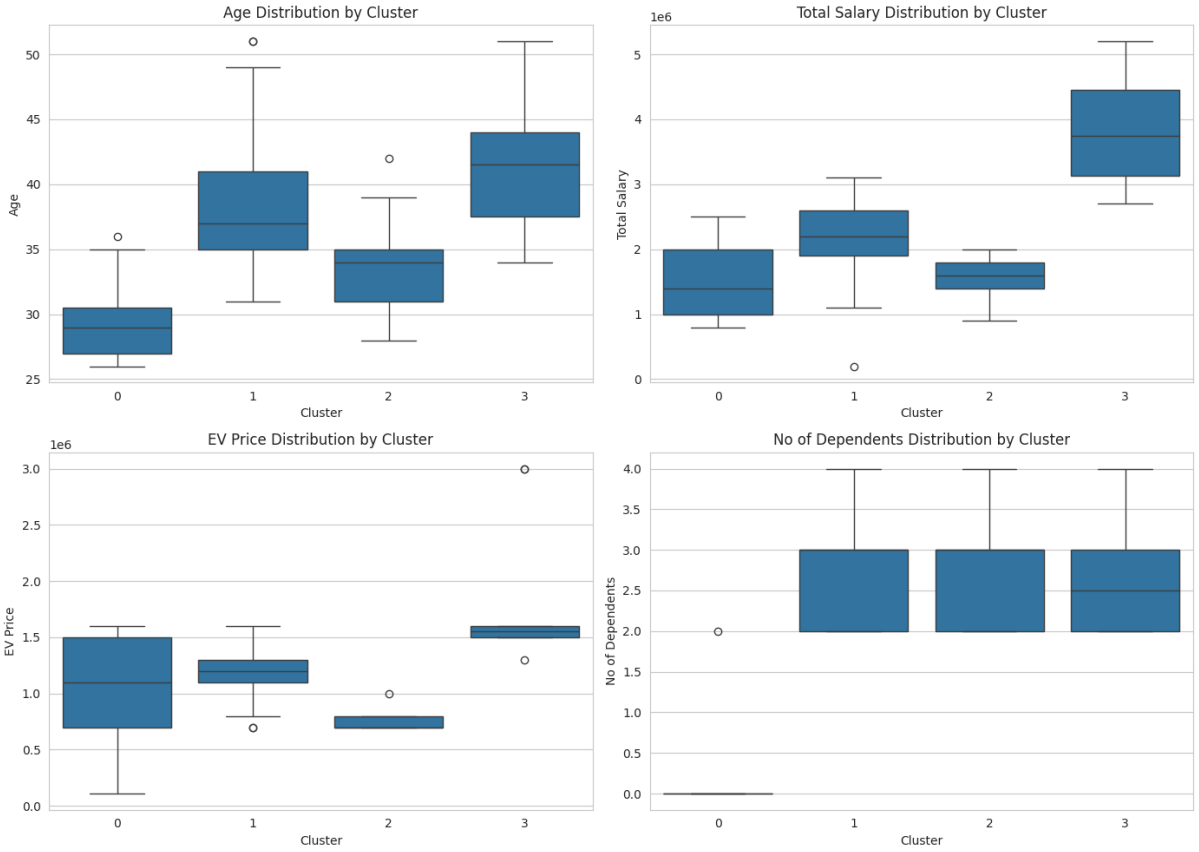
## Process

The clustering process involved several key steps. First, the dataset was preprocessed by handling missing values and ensuring numerical consistency. Important variables such as age, salary, EV price, and number of dependents were selected for clustering. The optimal number of clusters was determined using the Elbow Method and Silhouette Scores. The K-Means clustering algorithm was then applied to segment the customer base into four groups. The clusters were further analyzed to understand their characteristics, including their impact on revenue generation and market positioning. Visualizations such as boxplots and scatter plots were used to interpret the data more effectively. These insights were then consolidated to derive actionable business recommendations.

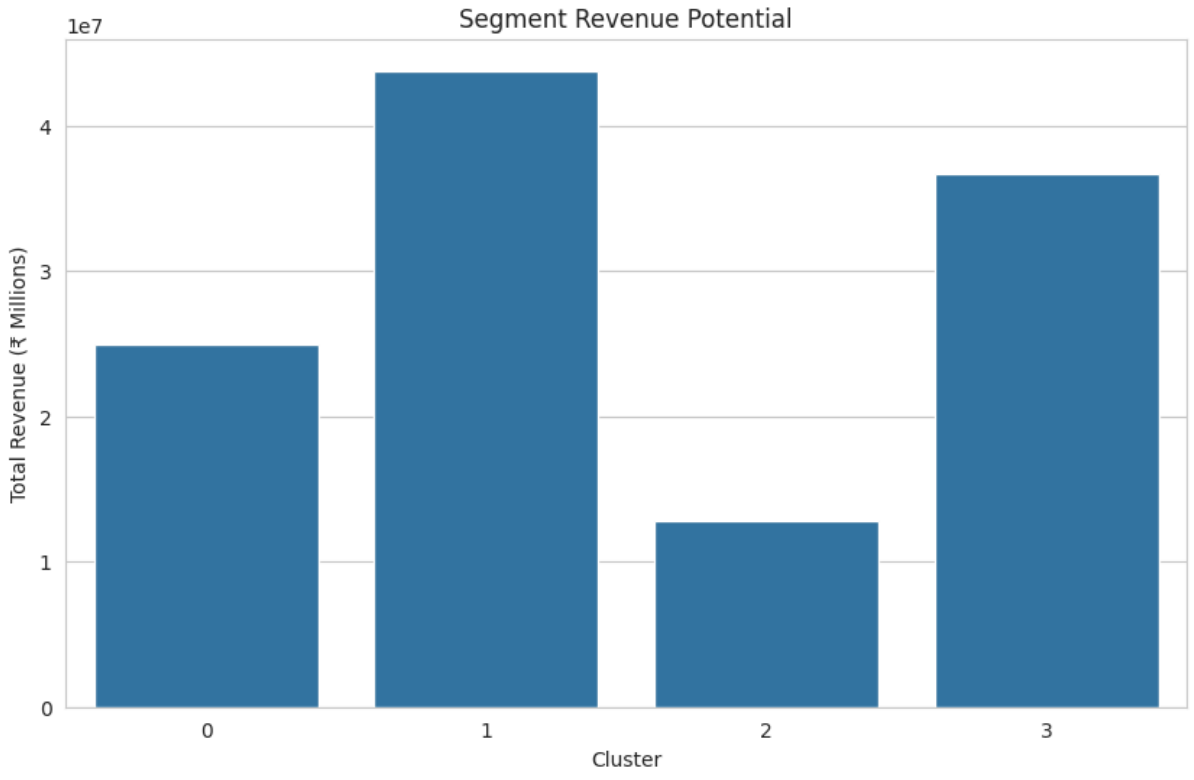
## Graph Explanations

Several graphs were used to visualize the clustering results and derive insights:

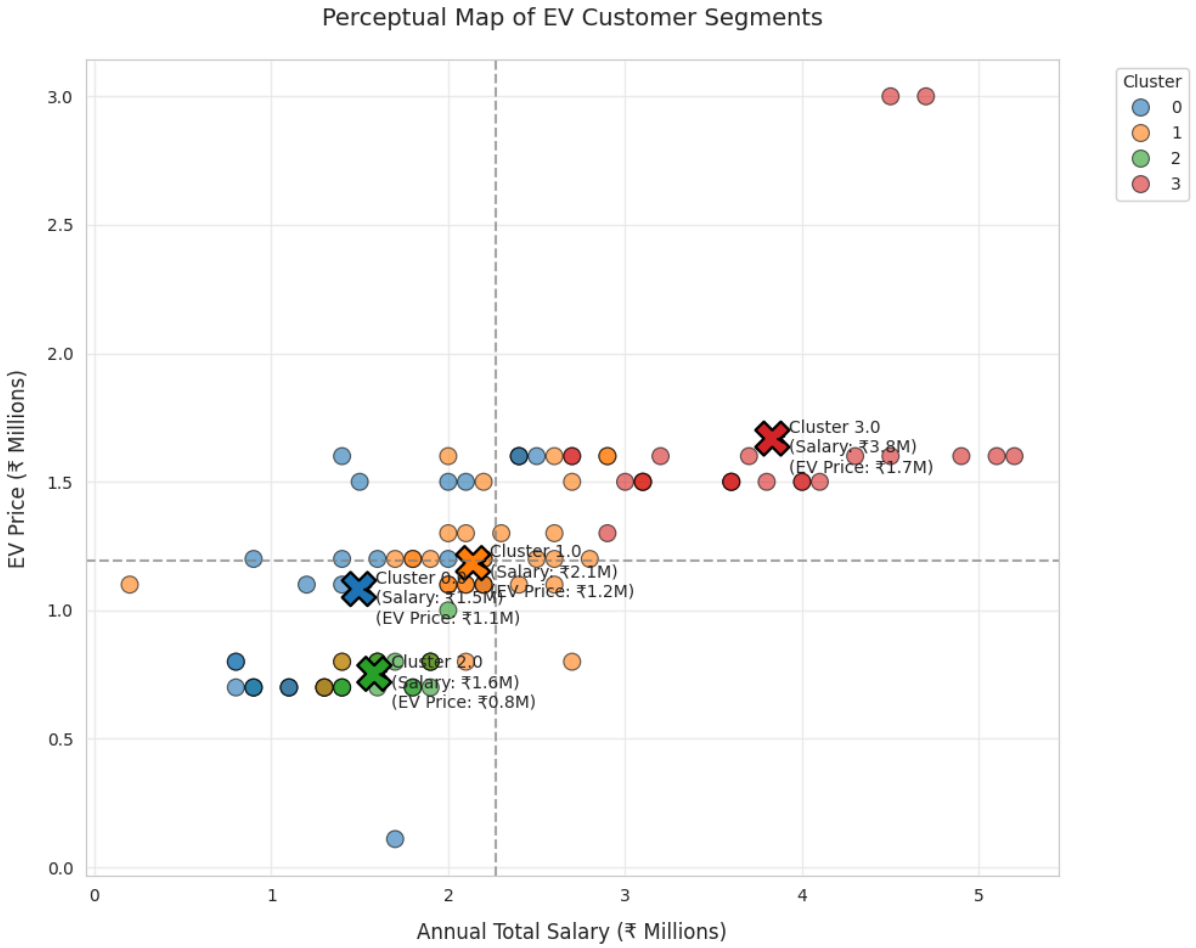
1. **Boxplots for Age, Salary, EV Price, and Dependents**: These visualizations illustrate the distribution of key variables across different clusters. The age distribution highlights differences in customer demographics, while salary distribution provides insight into financial capability. EV price preferences reveal purchasing trends, and the number of dependents affects household decision-making in EV purchases.




2. **Revenue Potential Bar Chart**: This chart presents the total revenue potential of each customer segment. Clusters with higher total salary and expensive EV preferences contribute more significantly to revenue generation.



3. **Perceptual Map of EV Customer Segments**: This scatter plot maps the relationship between annual salary and EV price preferences. It visually represents how different clusters align in terms of financial capacity and EV investment. The largest markers highlight the most significant customer groups in terms of revenue contribution.




## Solution for the EV Company

To maximize revenue and market penetration, the EV company should adopt a tailored strategy for each segment:

1. **High-income customers (Cluster 3)**: Focus on premium EV models, offer exclusive financing options, and enhance luxury features to attract this segment.
2. **Mid-income customers (Clusters 0 & 1)**: Provide flexible payment plans, mid-range EV models with good mileage, and strong after-sales service to appeal to this group.
3. **Low-income customers (Cluster 2)**: Introduce budget-friendly EV models, government incentives, and affordable leasing options to make EVs accessible to this segment.