

### Top Ranked Plans

- **P09** has the highest composite score (~0.87), making it the most suitable plan historically.
- **P01** and **P25** follow closely (~0.73–0.75 range).

### Balanced Mid-Tier Options

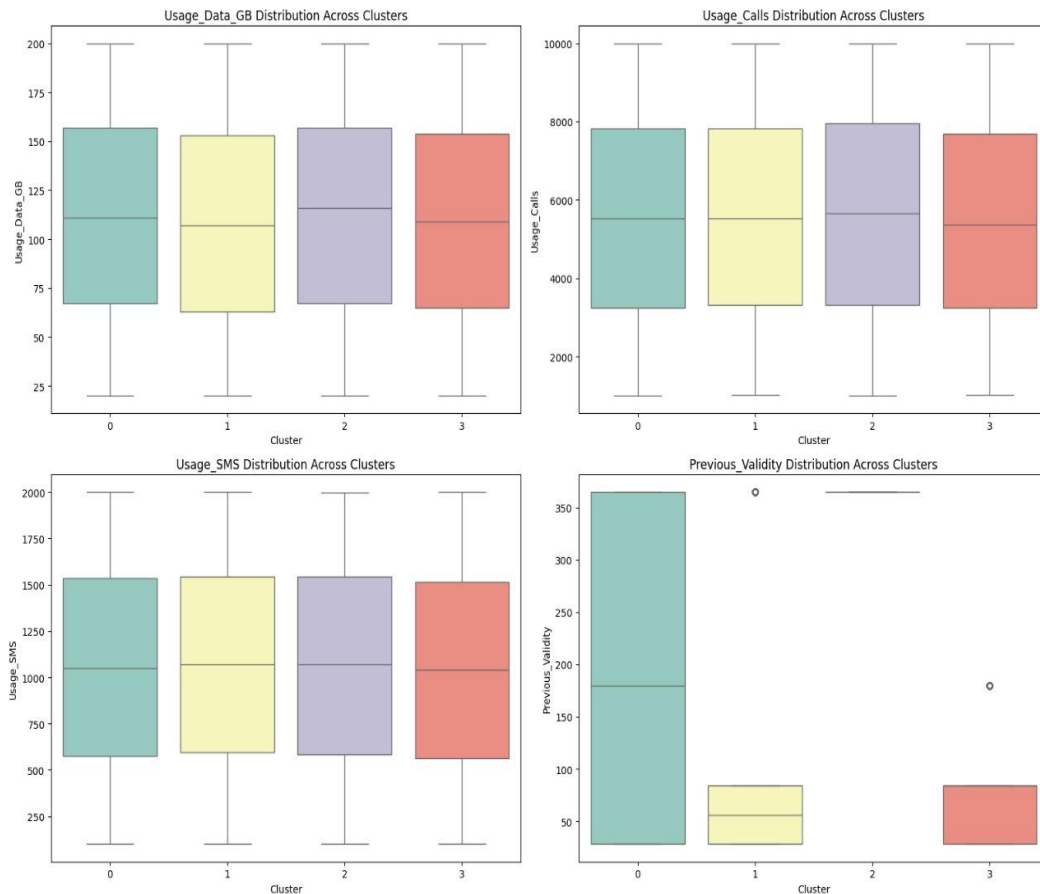
- Plans like **P17**, **P22**, **P18**, and **P20** score in the **0.65–0.70 range**, suggesting they meet a good balance of customer needs but are slightly less optimal.

### Lower Tier but Still Popular

- Plans **P07**, **P06**, and **P14** score around **0.55–0.63**, indicating that while they are chosen by many users, they may not be as efficient in terms of cost-to-benefit compared to top-ranked plans.

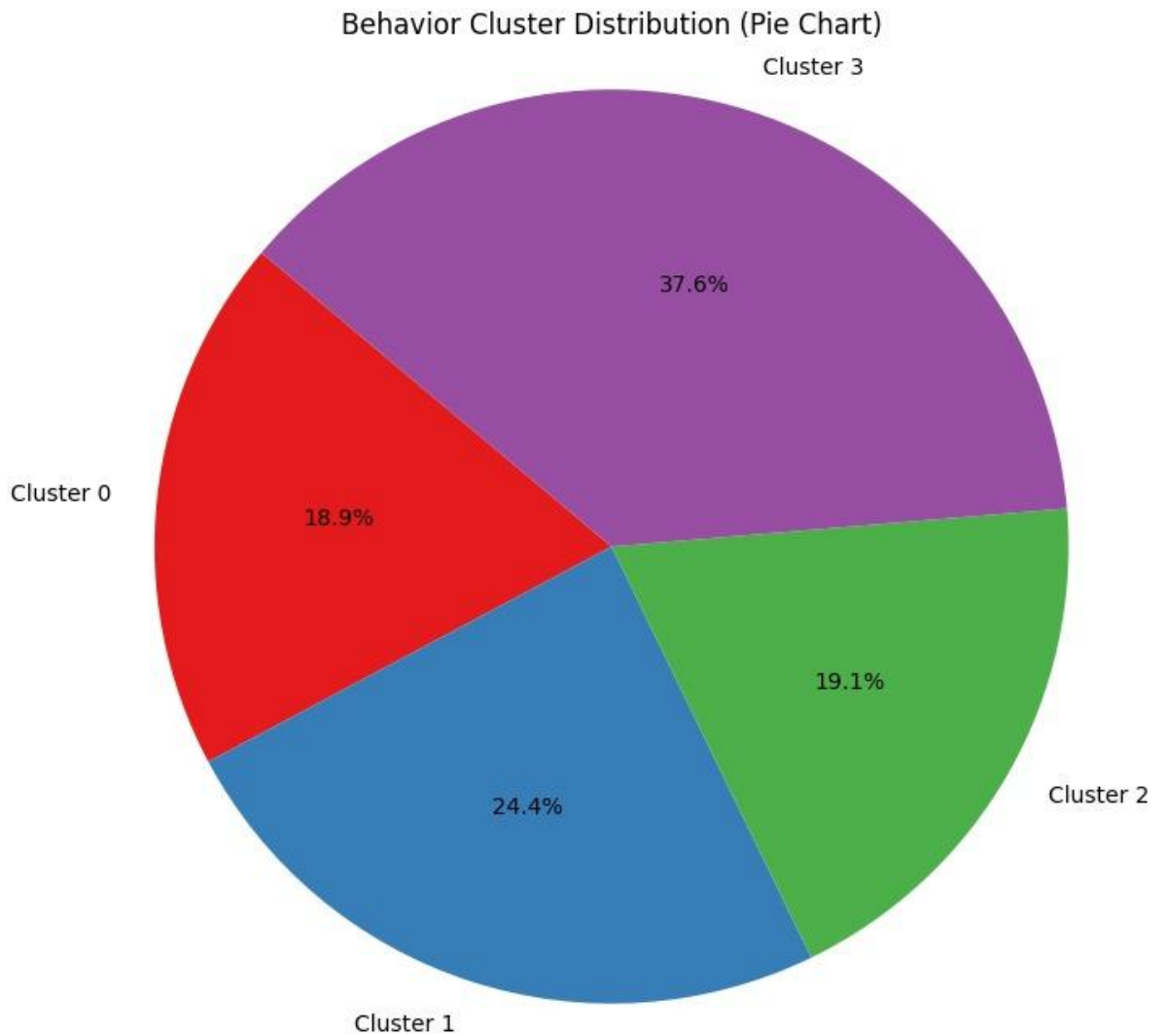
### Customer Loyalty to Certain Plans

- The fact that many customers historically used these same top plans suggests **strong alignment with real usage behavior**.



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- **Usage\_Data\_GB Distribution**
  - Data usage is fairly similar across clusters, with median usage around **100–120 GB**.
  - Spread is wide in all clusters, suggesting **high variability** in data consumption.
  - No cluster shows a distinctly higher or lower data usage pattern.
- **Usage\_Calls Distribution**
  - Call usage shows large variation across all clusters (ranges from **~1000 to 10,000 minutes**).
  - Median values hover around **5,000–6,000 minutes**, consistent across clusters.
  - Indicates that **voice call usage is not a strong differentiator** between clusters.
- **Usage\_SMS Distribution**

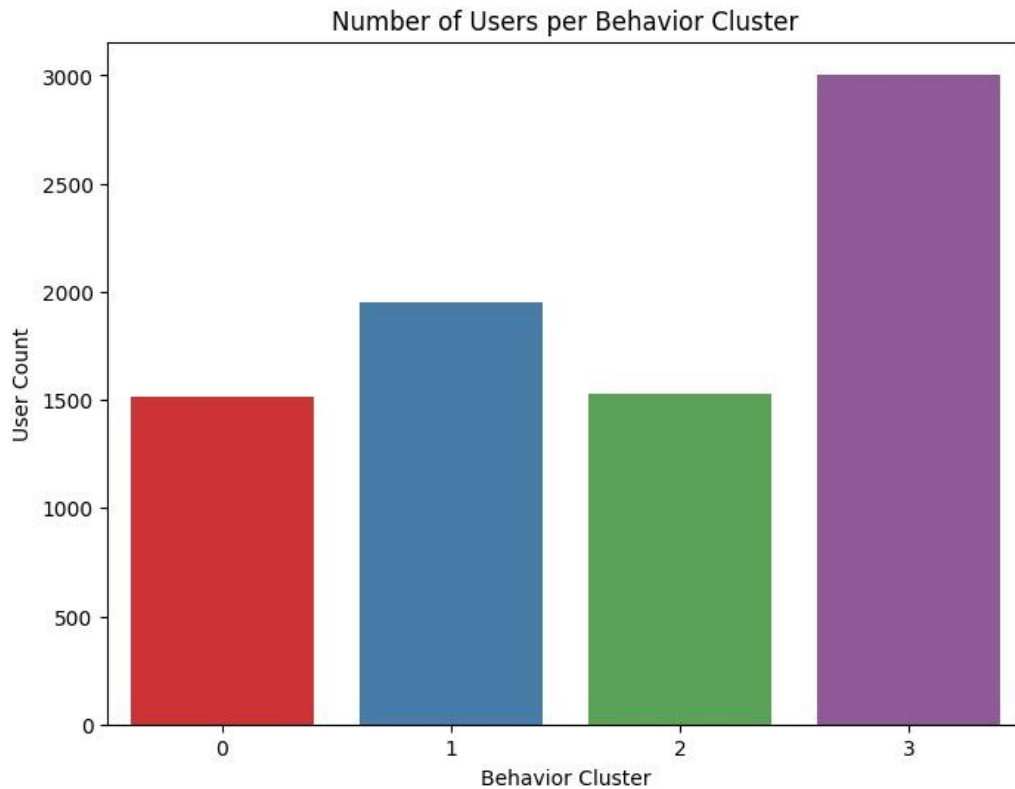
- SMS usage medians are consistent across clusters (~1,000 SMS).
- Similar spread across groups (from ~200 to ~2000 SMS).
- Suggests SMS usage does not vary significantly by cluster.
- **Previous\_VValidity Distribution**
- Here, we see a **major difference across clusters**:
- **Cluster 0**: Wide spread, median validity is **~180 days** (some as high as 365 days).
- **Cluster 1**: Much shorter validity, **~60 days**.
- **Cluster 2**: Very long validity, centered around **365 days**.
- **Cluster 3**: Shorter validity (~90–100 days), but with some high-value outliers.
- This is the **most distinguishing factor among clusters**.



***Behavior Cluster Distribution (Pie Chart)***

This **pie chart** illustrates the percentage share of users in each behavior cluster.

- **Cluster 0:** 18.9% of users.
- **Cluster 1:** 24.4% of users.
- **Cluster 2:** 19.1% of users.
- **Cluster 3:** 37.6% of users (largest segment).

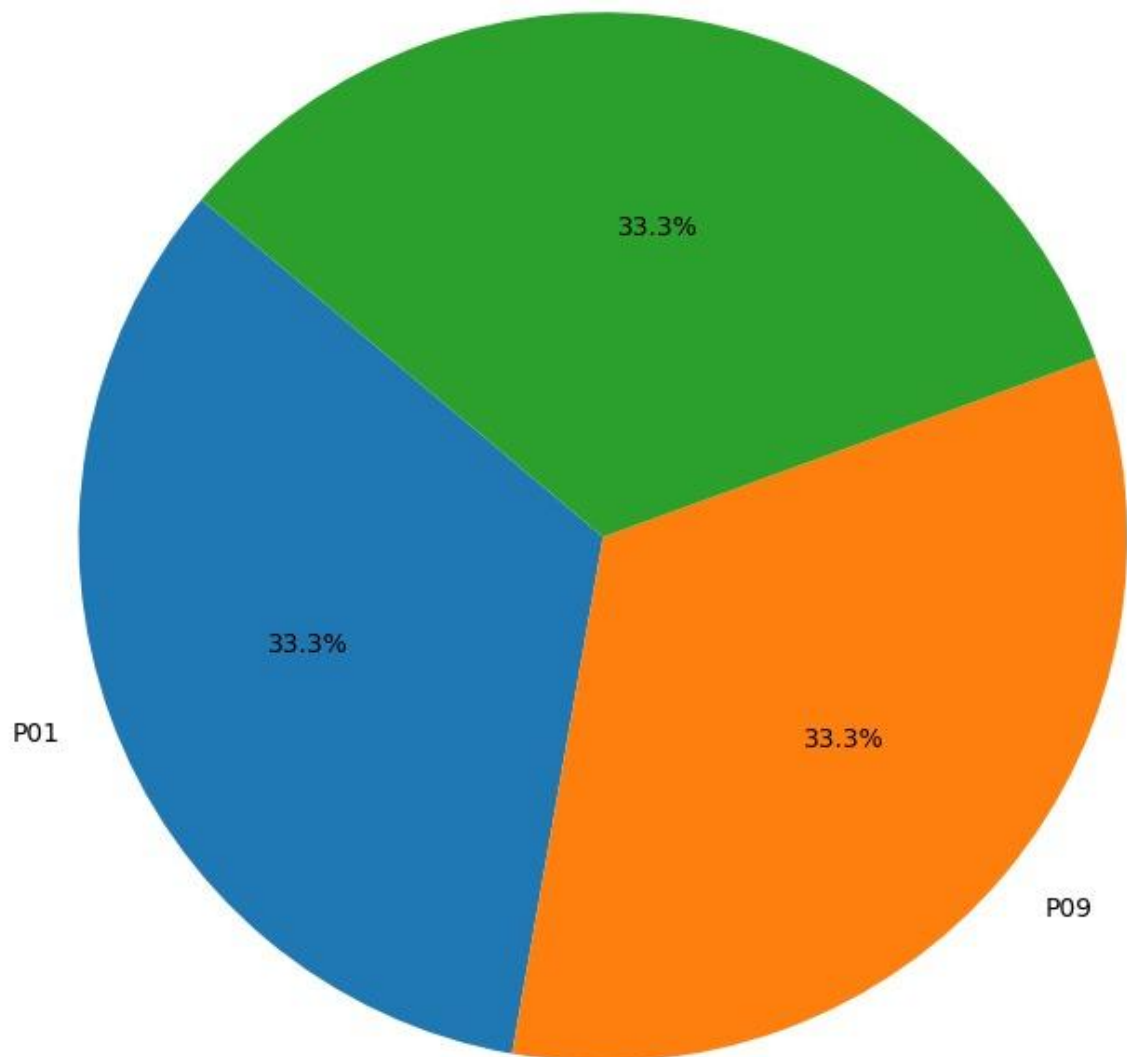


### ***Number of Users per Behavior Cluster***

This **bar chart** shows the **distribution of users** across the four behavior clusters.

- **Cluster 0:** Around **1,500 users**.
- **Cluster 1:** About **1,950 users**.
- **Cluster 2:** Roughly **1,550 users**.
- **Cluster 3:** The **largest group**, with about **3,000 users**.

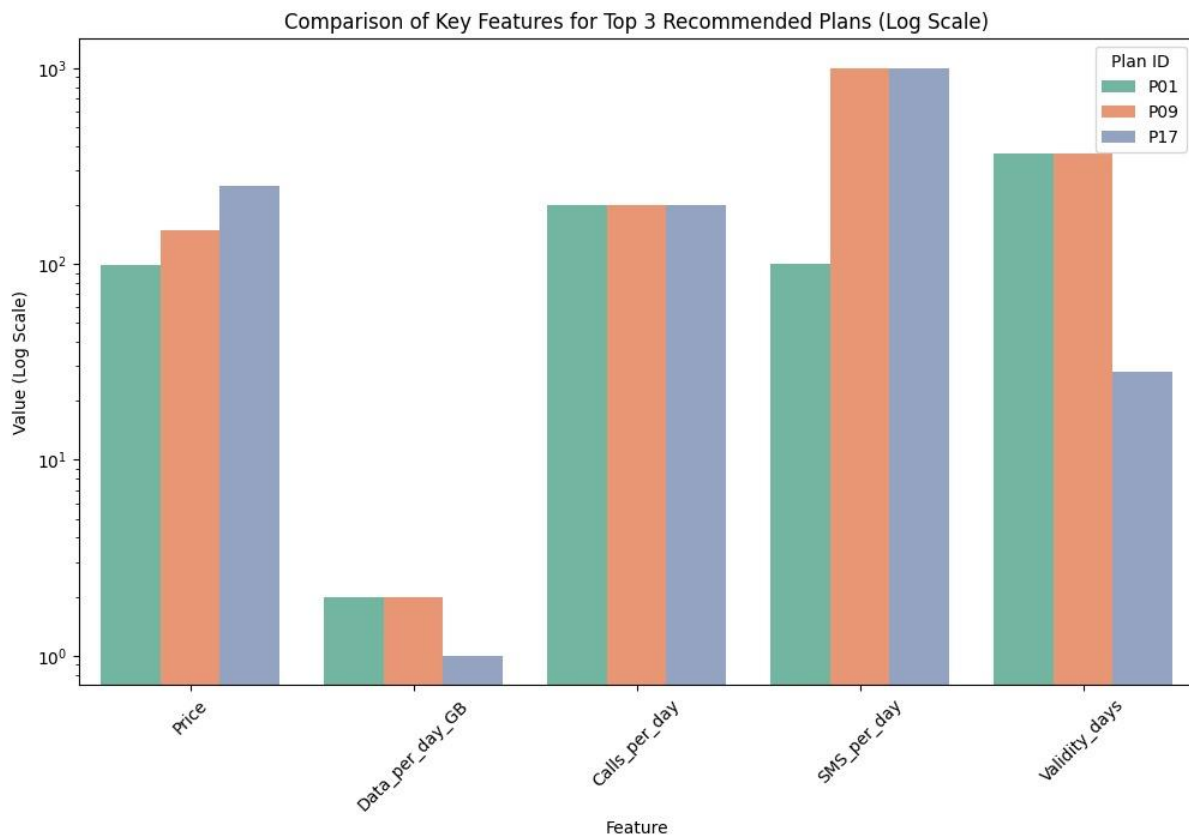
Proportion of Top 3 Recommended Plans (Top-3 Recommendations)  
P17



### Proportion of Top 3 Recommended Plans (Pie Chart)

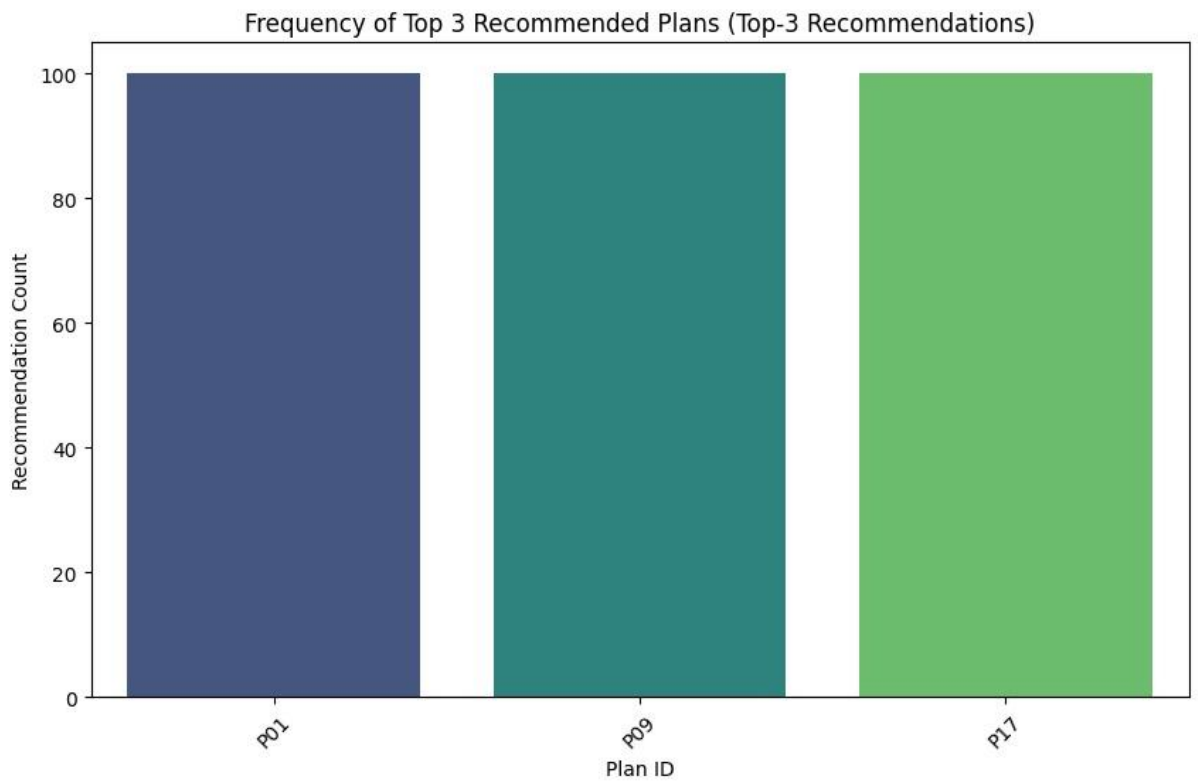
The pie chart illustrates the distribution of the **Top 3 recommended telecom plans: P01, P09, and P17**. Each plan contributes **33.3%** to the overall recommendations, indicating an **equal share** among the top suggestions.

This balanced distribution highlights that the recommendation engine **equally favors all three plans**, giving customers flexibility to choose based on their individual needs (e.g., price, data, calls, SMS, or validity).



- **Equal Distribution** → Each plan (**P01, P09, P17**) makes up **33.3% of recommendations**.
- This means the recommendation system does not strongly favor one plan over the others, but instead provides a **balanced set of top 3 choices**.
- Customers can then decide based on their **personal preference** (e.g., lower price vs. higher validity vs. more SMS).

This complements the earlier bar chart (frequency of top-3 recommendations) and feature comparison (log scale), reinforcing that **all three plans are equally competitive**.



## Comparison of Key Features (Log Scale)

### 1. Price

- **P01:** Lowest (~100 units) → **Budget-friendly option**
- **P09:** Mid-range (~150 units) → **Balanced cost**
- **P17:** Highest (~300 units) → **Premium pricing**