

1. Method to Classify Current Agent Performance (Low, Medium, High)

To objectively categorize agent performance, a data-driven approach using K-Means clustering was employed. This unsupervised machine learning technique groups agents based on similarities in their key performance indicators (KPIs), revealing natural segments within the agent population.

You can see this using this dataset :

https://colab.research.google.com/drive/1w2jd0k7so7J_VnochH5IV8Xko_ki2rfsK9?usp=sharing#scrollTo=lmbGdbFJD2dy

a. Feature Selection for Clustering:

The following KPIs, representing different facets of sales performance and efficiency, were selected for the clustering model. These metrics were typically averaged over a recent consistent period (e.g., the last 3-6 months) for each agent to represent their current stable performance level:

- new_policy_count

- ANBP value

- unique customers

- unique proposal

- proposal to quotation ratio

- quotation_to_policy_ratio

b. Data Preparation and Standardization:

The selected features were aggregated for each agent. To ensure that features with larger numerical ranges did not disproportionately influence the clustering process, the data was standardized using StandardScaler, transforming each feature to have a mean of 0 and a standard deviation of 1.

c. Determining the Optimal Number of Clusters:

The "Elbow Method" was utilized to determine the optimal number of clusters (k). This involves running K-Means for a range of k values and plotting the inertia (sum of squared distances of samples to their closest cluster center). The "elbow" point on the graph, where adding more clusters yields diminishing returns in reducing inertia, suggests an appropriate k. For this analysis, k=3 was identified as optimal, aligning with the desired Low, Medium, and High performance categories.

d. Clustering and Category Assignment:

K-Means clustering with k=3 was performed on the standardized data. The characteristics of the resulting clusters were then analyzed by examining the mean values of the input features for each cluster.

Cluster Centers (Mean KPI Values per Cluster):

Cluster Centers:				
	new_policy_count	ANBP_value	unique_customers	unique_proposal \
0	10.748747	5.527107e+05	19.253133	8.057018
1	14.403005	5.884374e+05	14.800902	14.451240
2	27.956072	1.544239e+06	15.296868	22.546550
	proposal_to_quotation_ratio	quotation_to_policy_ratio		
0	1.892755	0.797723		
1	0.865570	1.301712		
2	0.697327	2.017717		

Based on these cluster centers, particularly the new_policy_count and ANBP_value, the clusters were mapped to performance categories:

Cluster 2 -> High Performers: Characterized by significantly higher sales volume and value, strong proposal generation, and excellent conversion ratios.

Cluster 1 -> Medium Performers: Representing a middle tier with moderate sales volume, value, and conversion efficiencies.

Cluster 0 -> Low Performers: Exhibiting the lowest sales volume and value, fewer proposals, and notably poorer conversion ratios.

e. Performance Category Analysis (Average Characteristics):

The following table summarizes the average characteristics of agents within each derived performance category:

Performance Category Analysis:			
performance_category	new_policy_count	ANBP_value	unique_customers \
High	27.952556	1.544242e+06	15.302365
Low	10.783313	5.542328e+05	19.259651
Medium	14.395724	5.875444e+05	14.786478

performance_category	unique_proposal	proposal_to_quotation_ratio \
High	22.542699	0.697530
Low	8.077833	1.888910
Medium	14.455052	0.864838

performance_category	quotation_to_policy_ratio	agent_age \
High	2.017278	40.628523
Low	0.799882	41.128269
Medium	1.301985	40.409125

performance_category	agent_tenure_months
High	29.387339
Low	29.553549
Medium	29.330824

(Note: agent_age and agent_tenure_months were included post-clustering for descriptive analysis and do not show significant differentiation across categories, suggesting that current performance level, as defined by these KPIs, is not strongly tied to age or tenure alone.)

2. Intervention Strategy Based on Performance Category

Tailored intervention strategies are crucial for nurturing agent growth and addressing specific weaknesses. The following strategies are proposed for each performance category:

a. High Performers

Goal: Retain, empower, and leverage their expertise.

- **Recognition and Rewards:**
 - Implement "Agent of the Month/Quarter" programs with tangible benefits (bonuses, public recognition).
 - Offer performance-based incentives for exceeding targets or achieving specific milestones (e.g., highest ANBP).
- **Leadership and Mentorship Opportunities:**
 - Invite High Performers to mentor Medium or struggling Low Performers.
 - Involve them in training new agents or leading sales blitzes for specific products.
- **Advanced Development:**
 - Provide access to advanced sales training, product specialization courses, or industry certifications.
 - Offer opportunities to attend conferences or represent the company at industry events.
- **Strategic Involvement:**
 - Include them in pilot programs for new products, sales strategies, or CRM tools.
 - Seek their input on improving sales processes and overcoming market challenges.
- **Autonomy and Challenge:**
 - Provide them with more autonomy in their work and offer opportunities to take on challenging or high-value clients/territories.

b. Medium Performers

Goal: Elevate to High Performance by identifying and addressing specific skill or efficiency gaps.

- **Skill Gap Analysis & Targeted Coaching:**
 - Manager conducts one-on-one reviews to pinpoint specific areas for improvement (e.g., prospecting efficiency, proposal quality, closing techniques, specific product knowledge).
 - Offer targeted workshops or coaching sessions focused on these identified gaps (e.g., if quotation_to_policy_ratio is a weakness, focus on closing skills).
- **Peer Learning and Best Practice Sharing:**
 - Facilitate structured peer learning sessions where Medium Performers can learn from High Performers.
 - Create a repository of best practices, successful sales scripts, and effective proposal templates shared by top agents.
- **Goal Setting and Incentives:**
 - Set clear, challenging, yet achievable "stretch" goals to bridge the gap to High Performer metrics.
 - Offer incentives for achieving these specific improvement targets (e.g., improving a key conversion ratio by X%).
- **Pipeline Management Support:**
 - Provide tools or training on effective CRM usage for pipeline management and follow-ups, if this appears to be a bottleneck.
 - Focus on improving the proposal_to_quotation_ratio if it's higher than that of High Performers.

c. Low Performers

Goal: Address fundamental issues, improve core skills, and build a foundation for consistent sales. This group requires the most intensive support.

- **Intensive Coaching and Foundational Training:**
 - **Address Customer-to-Proposal Bottleneck:** Given their high unique_customers but low unique_proposal, training must focus on:

- Effective lead qualification: Identifying genuinely interested prospects.
- Transitioning conversations: Guiding initial interactions towards a needs analysis and proposal stage.
- Value proposition articulation: Clearly communicating how products meet client needs to warrant a proposal.
- **Improve Proposal Quality:** The very high proposal_to_quotation_ratio suggests proposals are not compelling or well-targeted.
 - Manager to review a sample of submitted proposals weekly, providing specific feedback on clarity, customization, and addressing client needs.
 - Workshop on "Crafting Effective Insurance Proposals."
- **Boost Closing Skills:** Address the low quotation_to_policy_ratio.
 - Enroll in basic sales training modules focusing on objection handling, creating urgency, and closing techniques.
 - Regular role-playing of sales scenarios with a manager or trainer.
- **Structured Activity and Small Wins:**
 - Set small, daily/weekly achievable activity targets (e.g., X qualified conversations leading to a proposal, Y proposals submitted).
 - Focus on securing even 1-2 new_policy_count to build confidence and momentum.
- **Mentorship and Support:**
 - Assign a dedicated mentor (ideally a patient High or strong Medium Performer) for regular guidance.
 - Implement more frequent (e.g., bi-weekly or weekly) one-on-one progress reviews with the manager, focusing on specific action items and challenges.
- **Performance Improvement Plan (PIP):**

- If, after a defined period of intensive support (e.g., 2-3 months), there is no significant improvement in key activity or conversion metrics leading to sales, a formal Performance Improvement Plan (PIP) with clear, time-bound objectives and consequences should be considered.
- **Motivation and Basic Needs:**
 - Ensure the agent understands the product well and believes in its value.
 - Address any potential external factors or motivational issues through open conversation with the manager.

By regularly re-classifying agents using this data-driven methodology and applying these tailored intervention strategies, ABC Insurance can proactively manage its sales force, develop talent, and drive overall sales growth. The focus should be on continuous improvement and providing the right support at the right time for each agent.
