

Workforce Analytics

Who's Leaving, Who's Leading, and What to Do About It?

July, 2025

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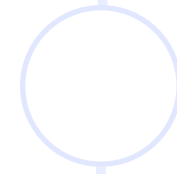
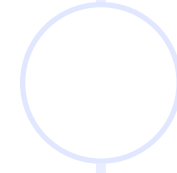
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- Problem Statement
- Business Objective
- Understanding workforce segmentation
- Employee Cluster Snapshot
- Emerging Leaders Profile
- Why prioritize emerging leaders
- Recommendations

Use Case 1



Problem Statement

Understand key drivers behind voluntary employee resignations to:

Identify who is leaving and why?

Compare characteristics of voluntary leavers vs stayers

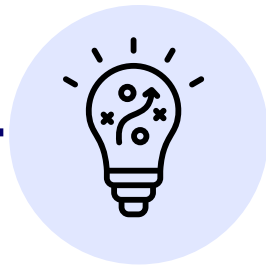
Discover actionable drivers of attrition

Design targeted interventions to reduce future exits

Business Objective

- Reduce voluntary turnover by uncovering early indicators of resignation
- Prioritizing 2–3 most impactful factors the company can influence

Understanding Voluntary Attrition



Goal

Compare leavers
vs stayers

Identify Drivers

Scope

Voluntary terminations
~9000 latest unique
employee records are
considered for 2023

Approach

Exploratory Data
Analysis

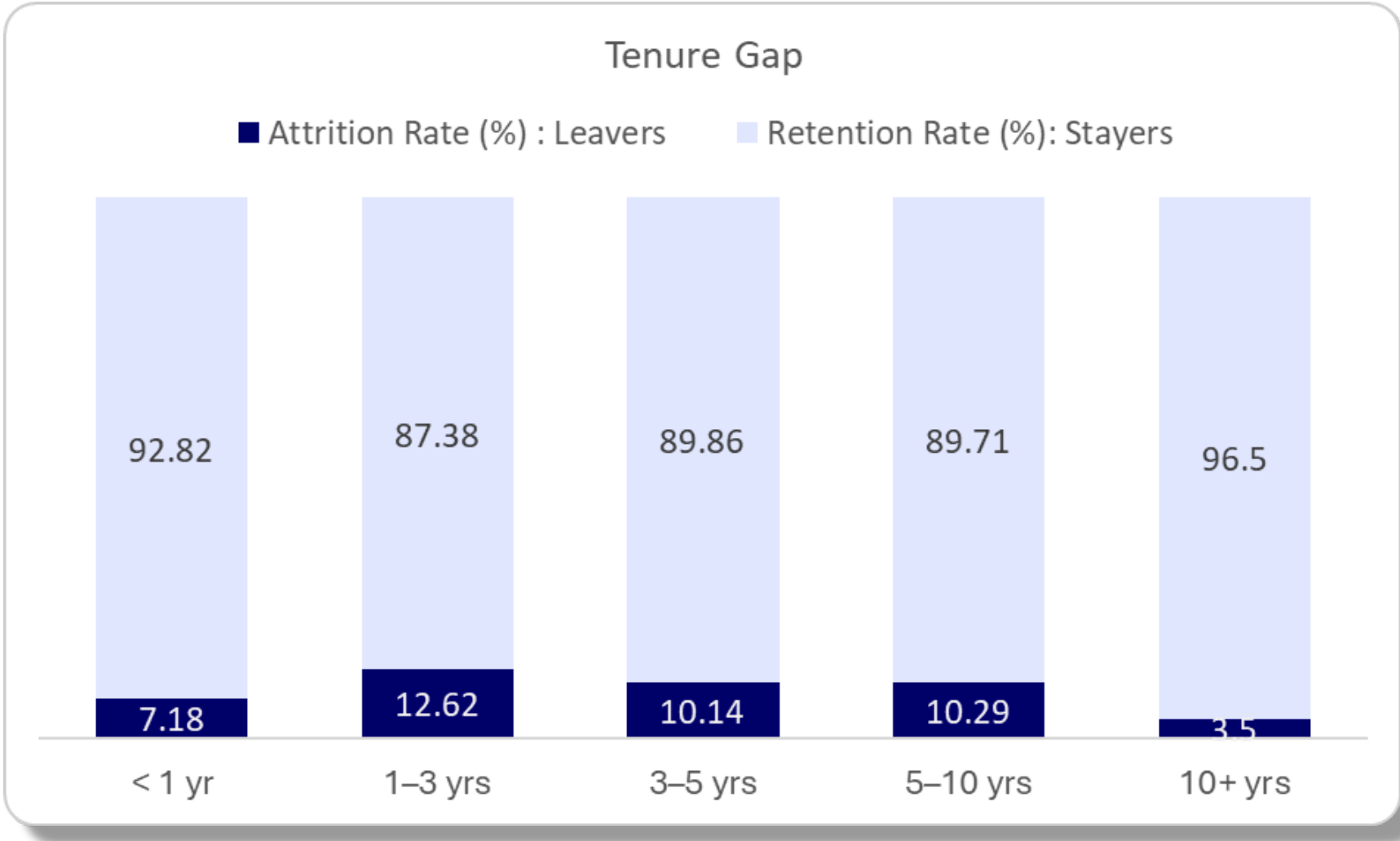
Statistical Testing

Attrition Driver
Modelling

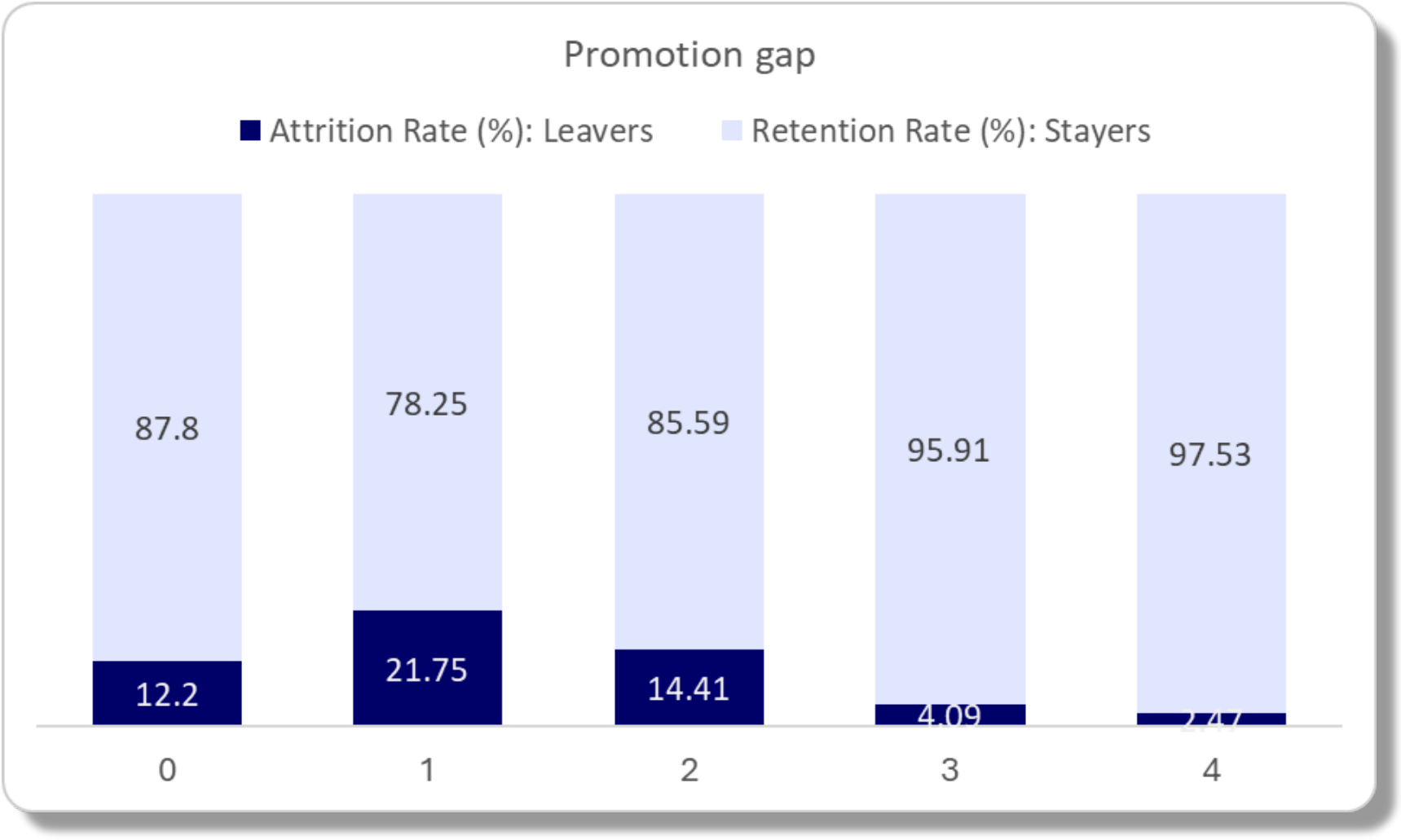
Profiling Leavers vs. Stayers

8.67%
Overall Voluntary Attrition Rate

- Tenure and career progression: Employees who leave tend to be early in their career journey and have had fewer promotions.



Tenure gaps: Voluntary leavers average ~3.9 yrs versus ~6.8 yrs for stayers, driving a 12.6% attrition rate in the 1–3 yr tenure band vs just 3.5% in the 10+ yr group

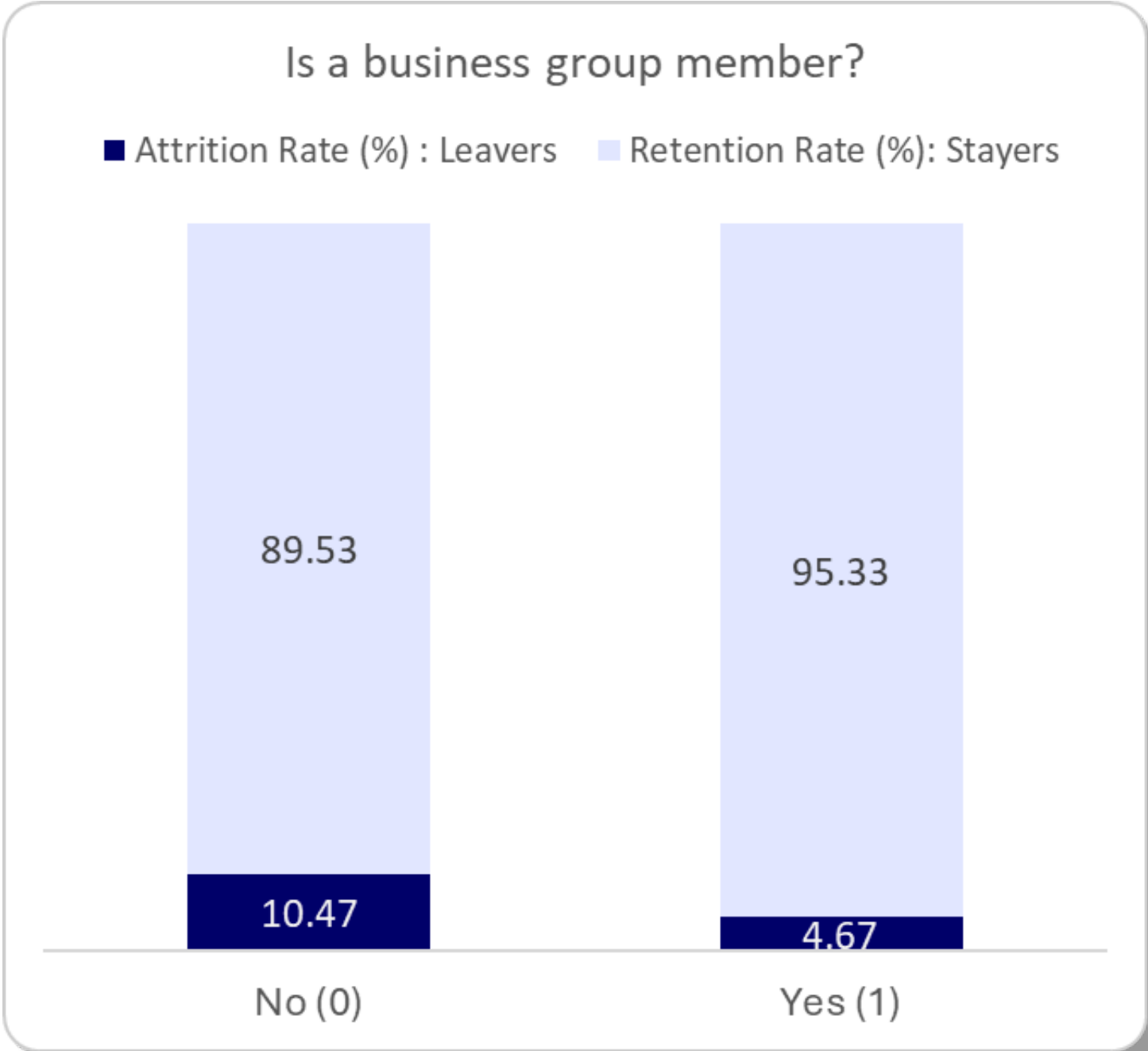
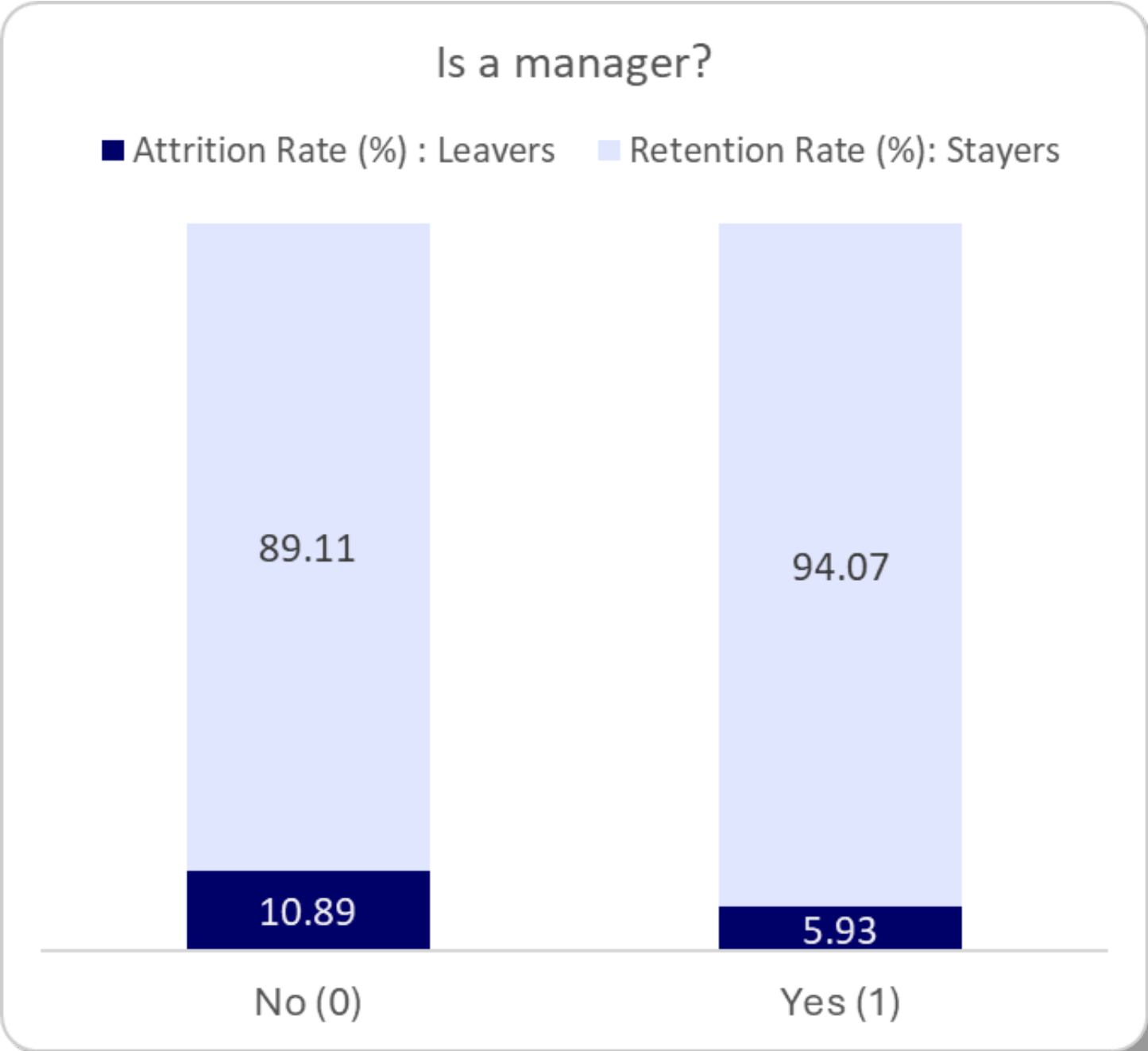


Promotion gap: Leavers have had 1.62 promotions on average, compared to 2.47 for stayers.
Attrition risk is 21.8% after one promotion, versus 6.8% after three+ promotions.

Profiling Leavers vs. Stayers

8.67%
Overall **Voluntary Attrition Rate**

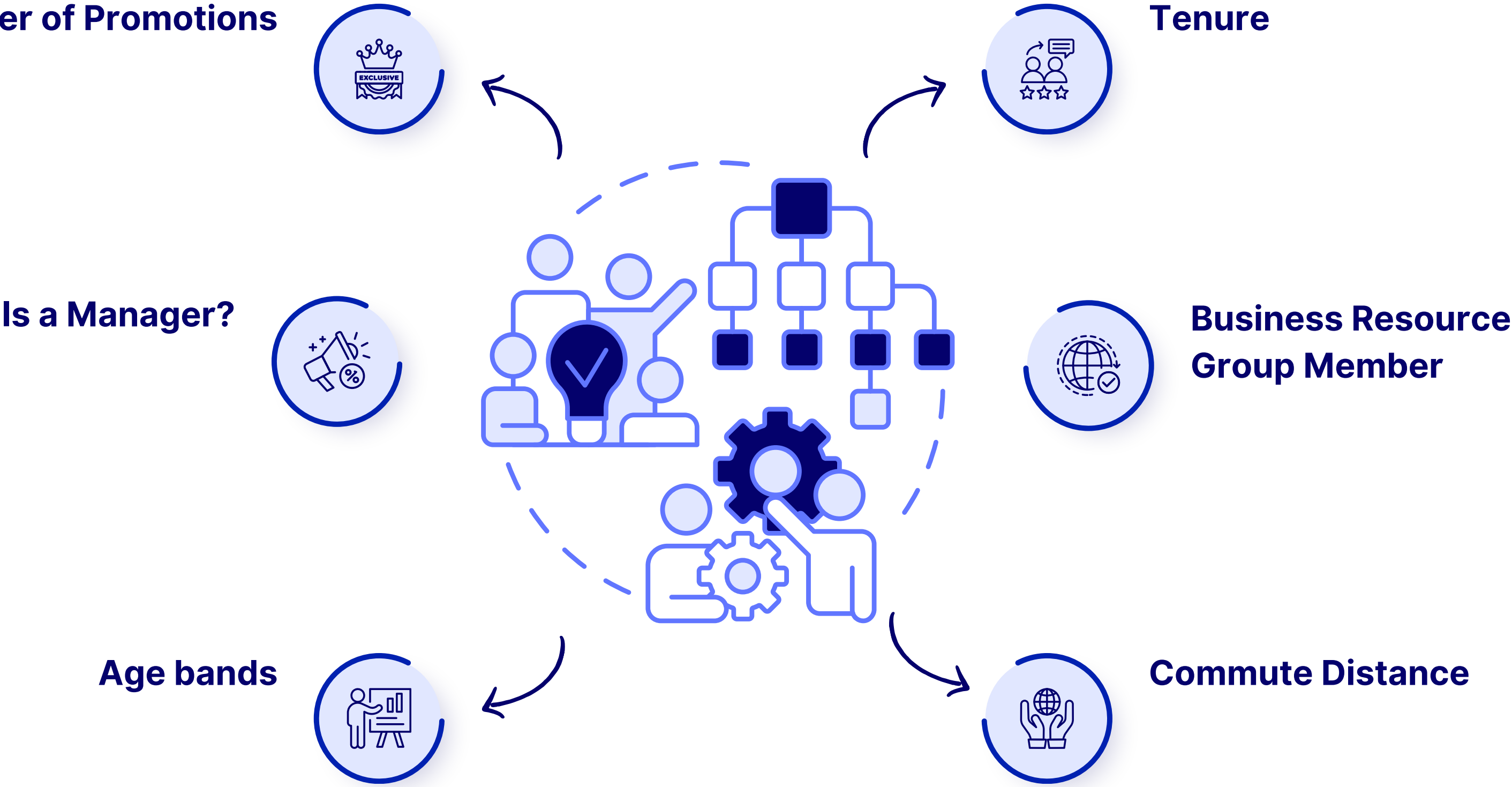
- Leadership & engagement: Employees in manager roles or active in resource groups stay longer
- *Managers and ERG members have 60-70% lower quit risk.



Note: Leavers n= 824, Stayers n= 7,695

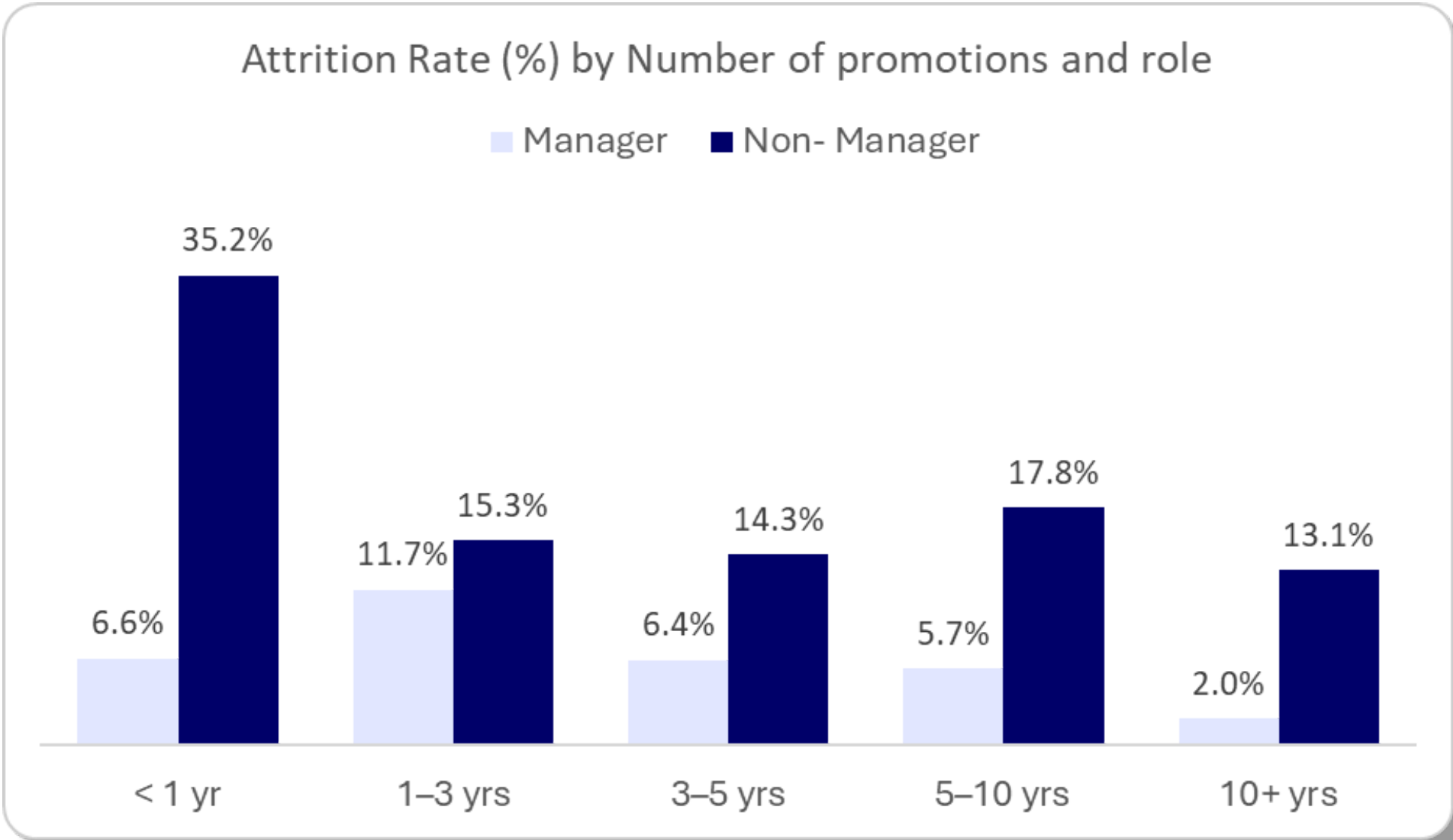
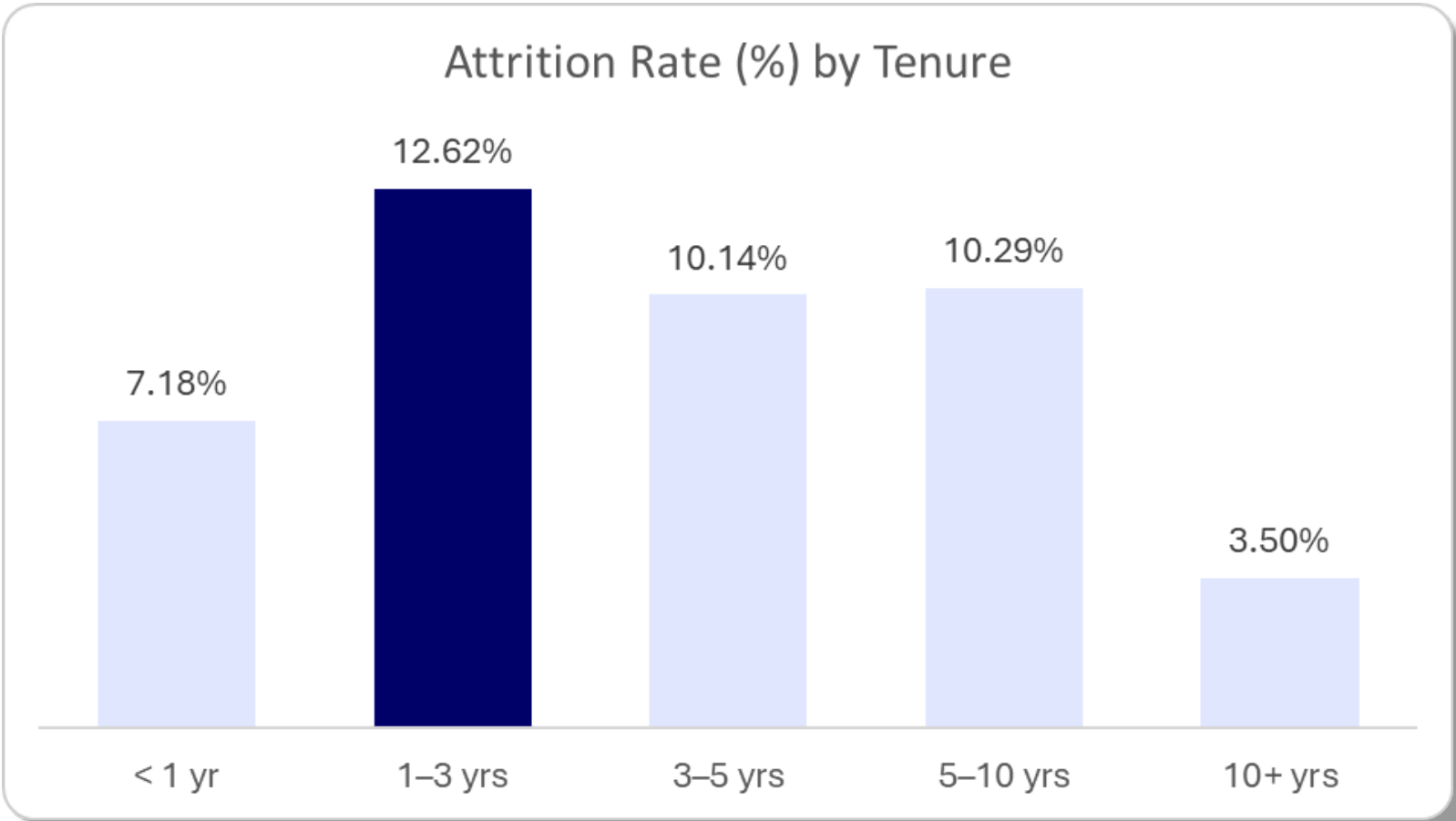
*Logistic model

Drivers of Voluntary Termination



Deep Dive: Tenure and Manager Role

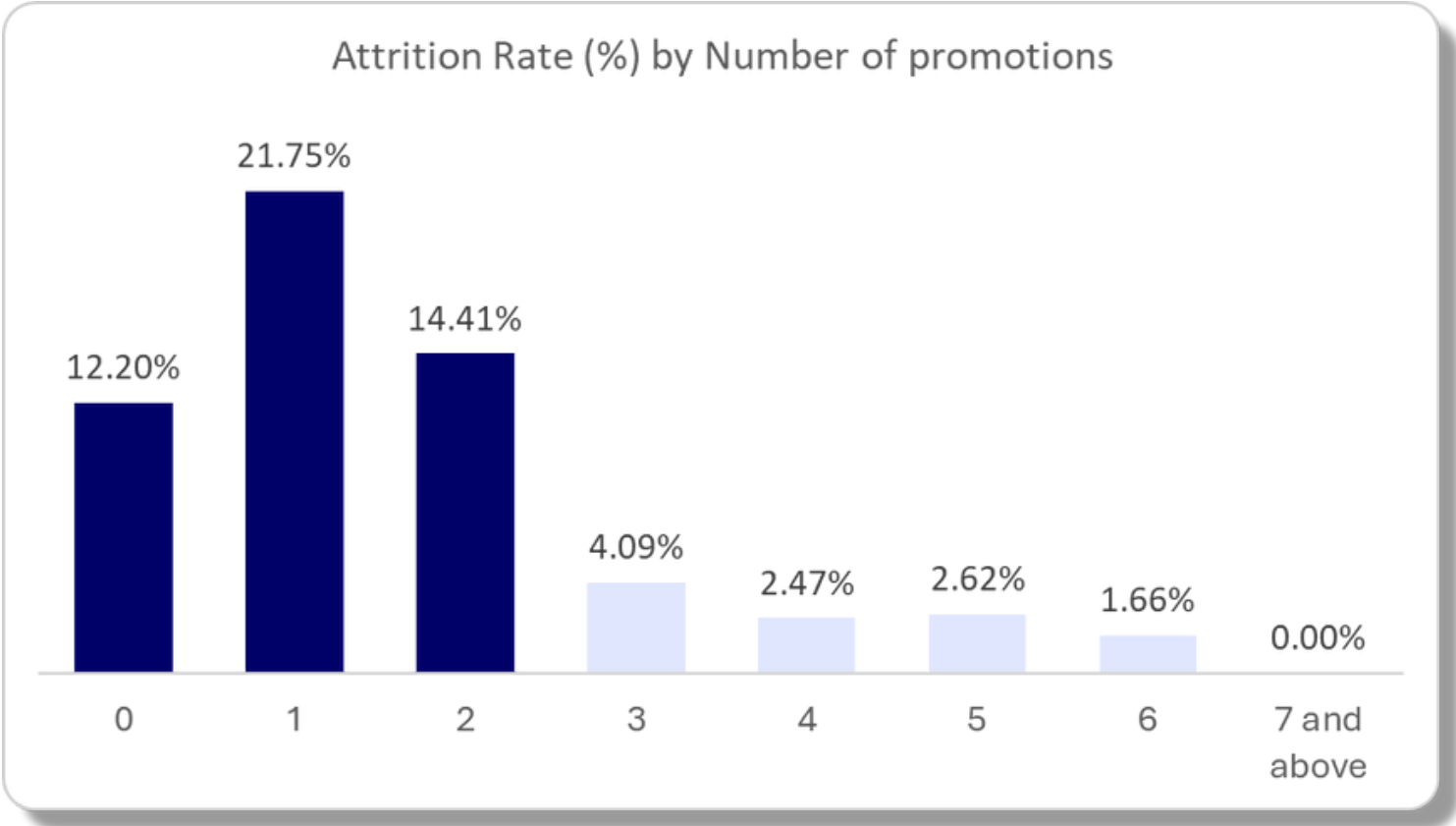
8.67%
Overall Voluntary Attrition Rate



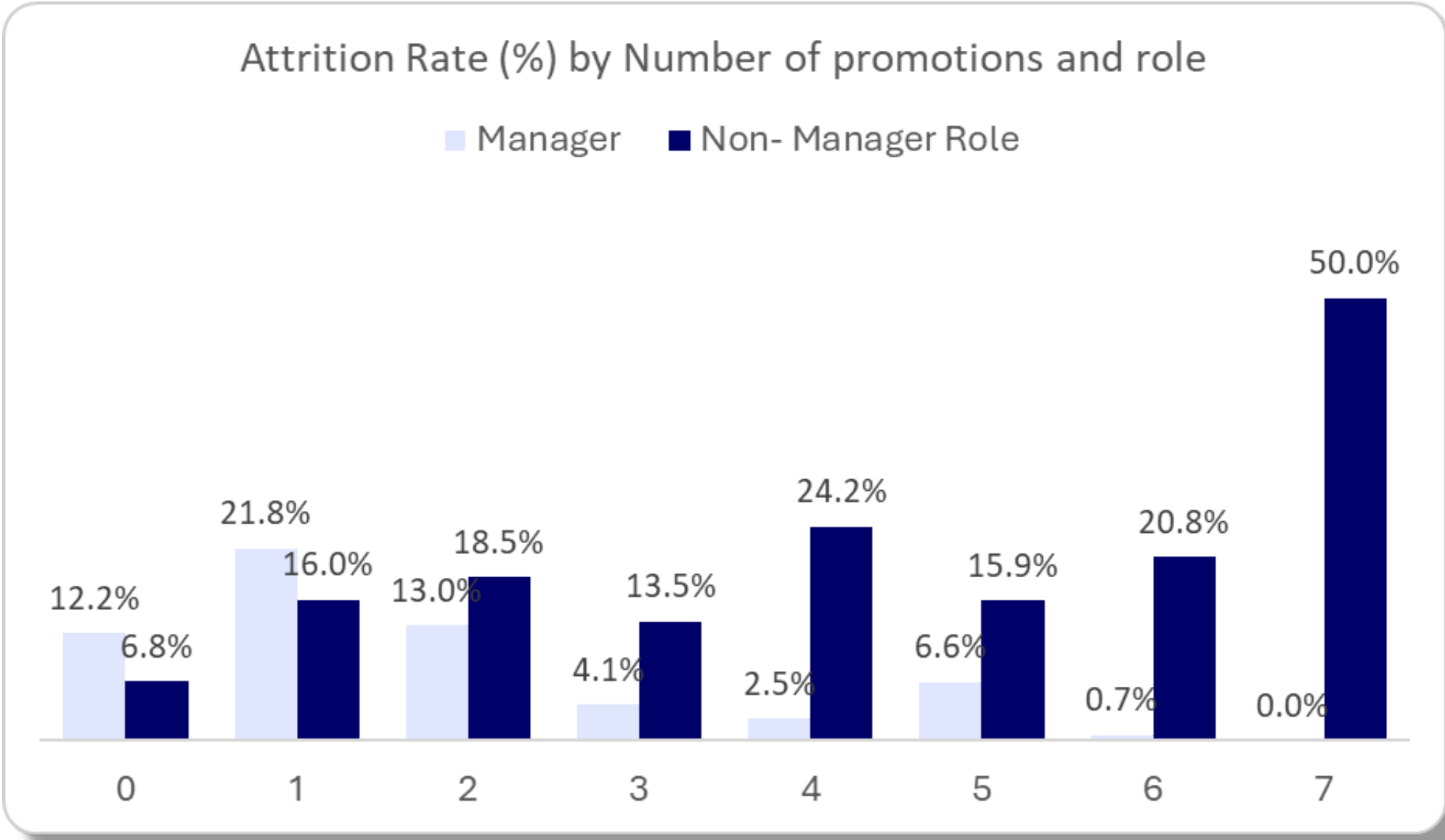
- Employees with less than 3 years' tenure have 3× higher quit risk than long-tenured ones.
- Manager status is a critical differentiator, non-managers consistently show higher attrition at all tenure levels

Deep Dive: Promotions and Manager Role

8.67%
Overall **Voluntary Attrition Rate**



- Employees with 1–2 promotions are 2.4× more likely to quit than those with none or 3+ *
- High cumulative promotions (3+) become mildly protective factor, once employees gain seniority, they tend to stay.



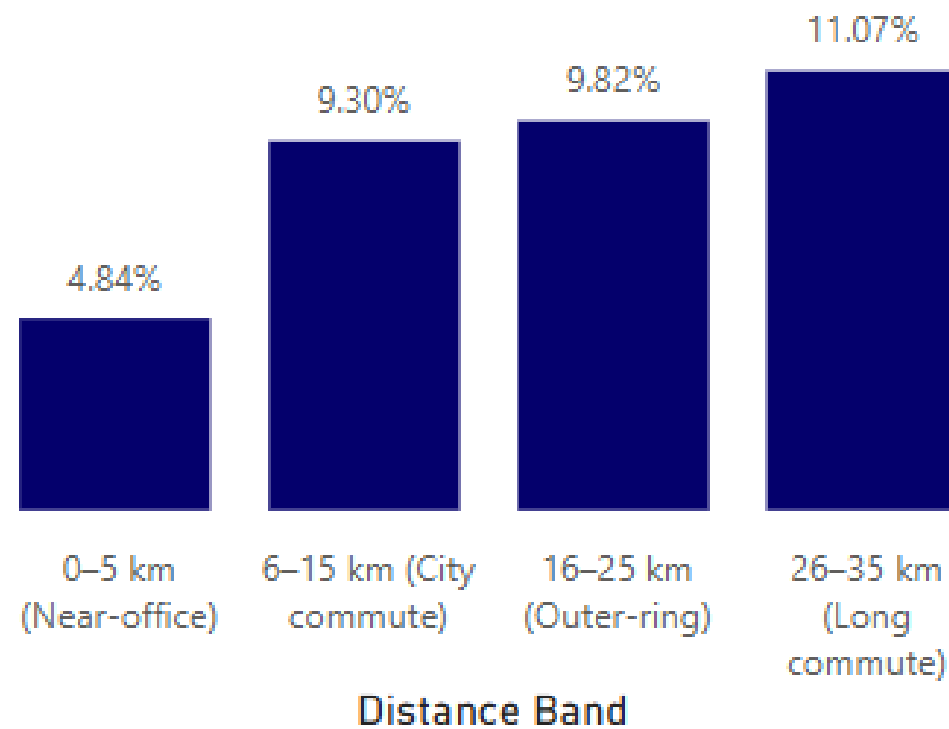
- While attrition rates show a similar normalized trend for manager roles, non - manager roles show some difference
- Attrition steadily climbs as promotions stack up for non managerial roles.

*Logistic model

Attrition Trends

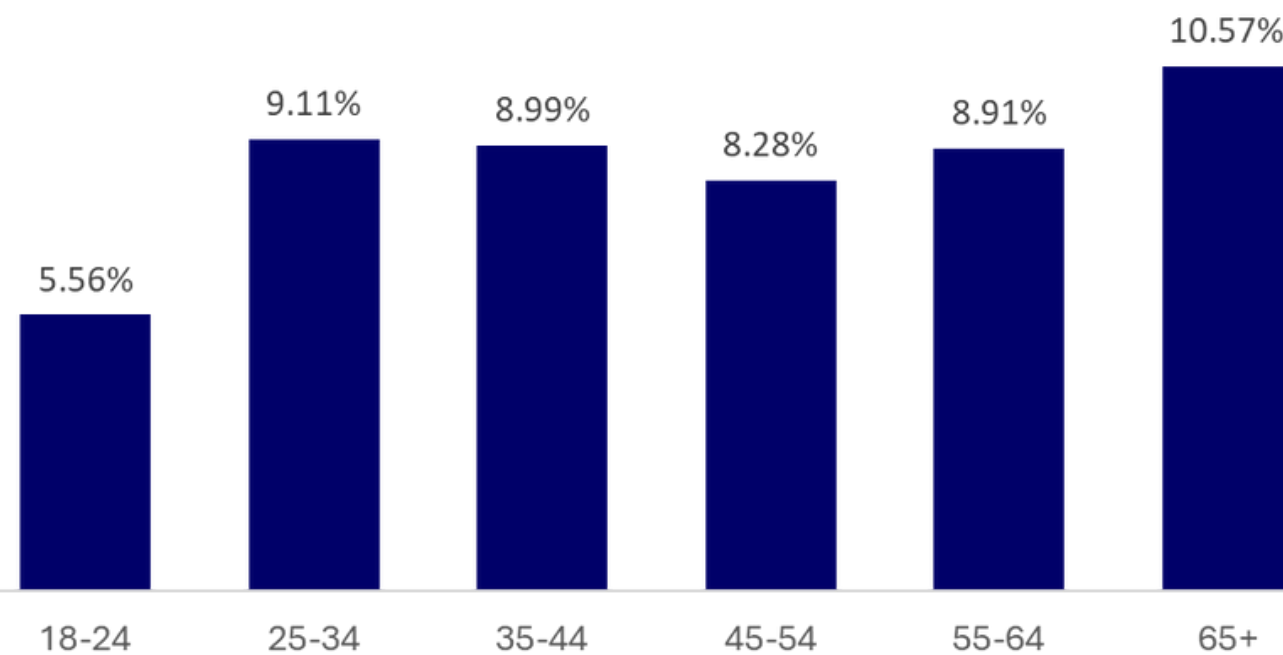
8.67%
Overall Voluntary Attrition Rate

Attrition Rate % by Distance Band

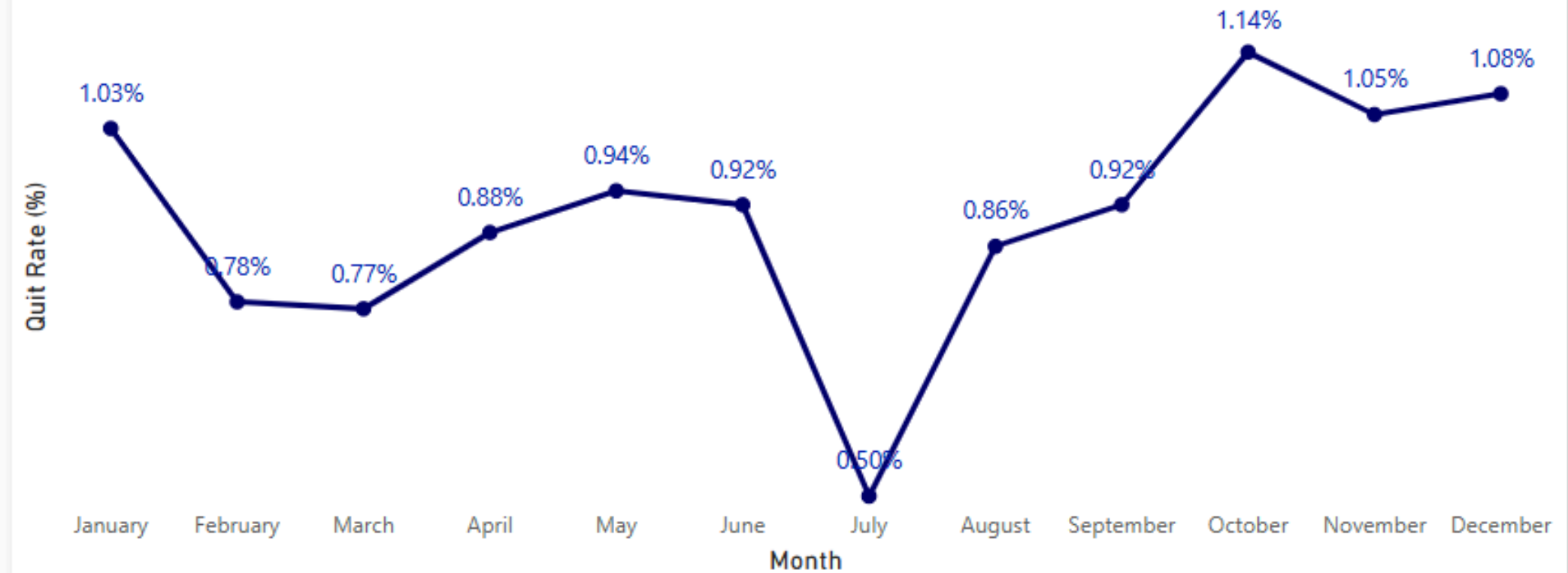


- Attrition rate increases with age and commute distance
- Attrition rate monthly trend sees a dip in July, which likely reflects fewer exits during mid-year leave periods or temporary freeze on terminations.
 - There is a Spike in Oct-Dec, which may align with fiscal year-end reviews, bonus payouts, or seasonal job market activity. Some employees delay resignations until after receiving bonuses or taking holidays.

Attrition Rate (%) by Age



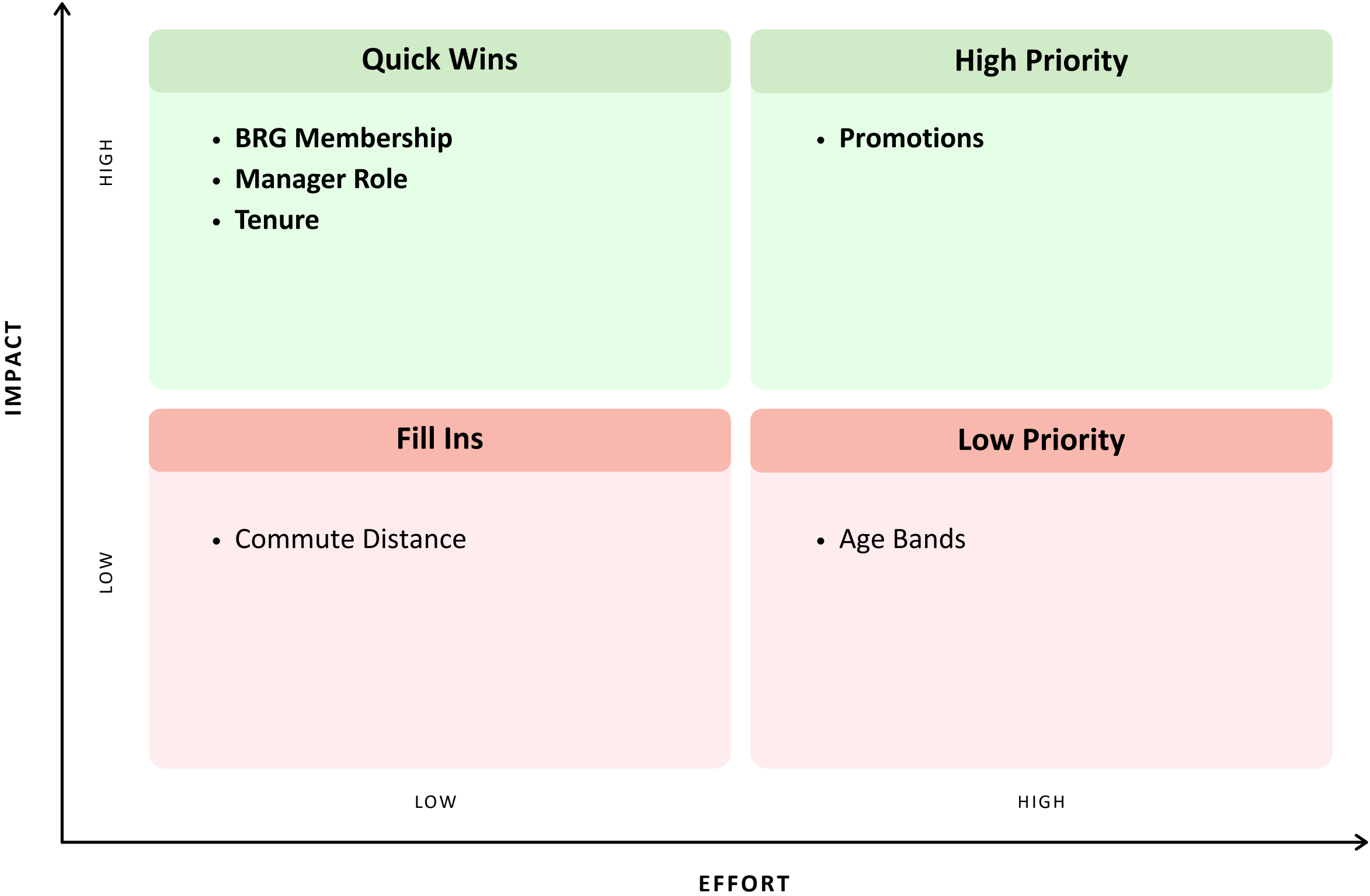
Quit Rate Monthly Trend



*Metrics that do not show a clear trend are included in the appendix

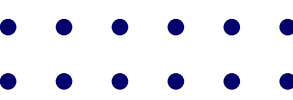
Impact Effort Matrix

The company's focus should be 'High Impact' drivers



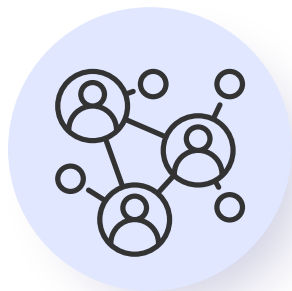
*As tenure and promotions are related, we choose the more significant driver (promotions) between the two

Recommendations



1. Promotions and growth pathways

- Tailor retention by promotion path: a 1-promotion manager needs different support than a 1-promotion Individual Contributor.
- Launch structured career roadmap reviews for the 35–54 yr mid-career cohort.
- Offer rotational leadership, stretch roles, or senior IC tracks for non-manager high performers.



2. BRG membership and community building

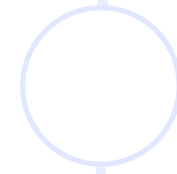
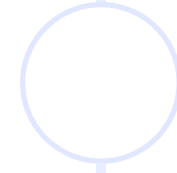
- Scale ERG recruitment and visibility—especially for new hires and mid-tenure employees.
- Link ERG participation to recognition programs or leadership development tracks.
- Integrate ERG touchpoints into early onboarding and career milestones.



3. Manager Role as a Retention Anchor

- Manager onboarding should provide mentoring, leadership coaching, and a 90-day development plan.
- Fast-track high-potential ICs into leadership tracks to reduce career stagnation risk.
- Recognize managers not just for output, but for team retention, culture, and development impact.

Use Case 2



Problem Statement

- Understand shared attributes among employees to:

Segment the employee base into meaningful groups

Prioritize one key segment and identify 2–3 unique, actionable insights

Business Objective

- Enable personalized talent engagement by uncovering natural employee segments
- Recommend talent interventions that improve engagement and retention for this group

Understanding Workforce Segmentation



Goal

Employee
Clustering

Targeted strategy
for prioritized
segment

Scope

Employees that are
currently in the company

~8000 latest unique
employee records are
considered for 2023

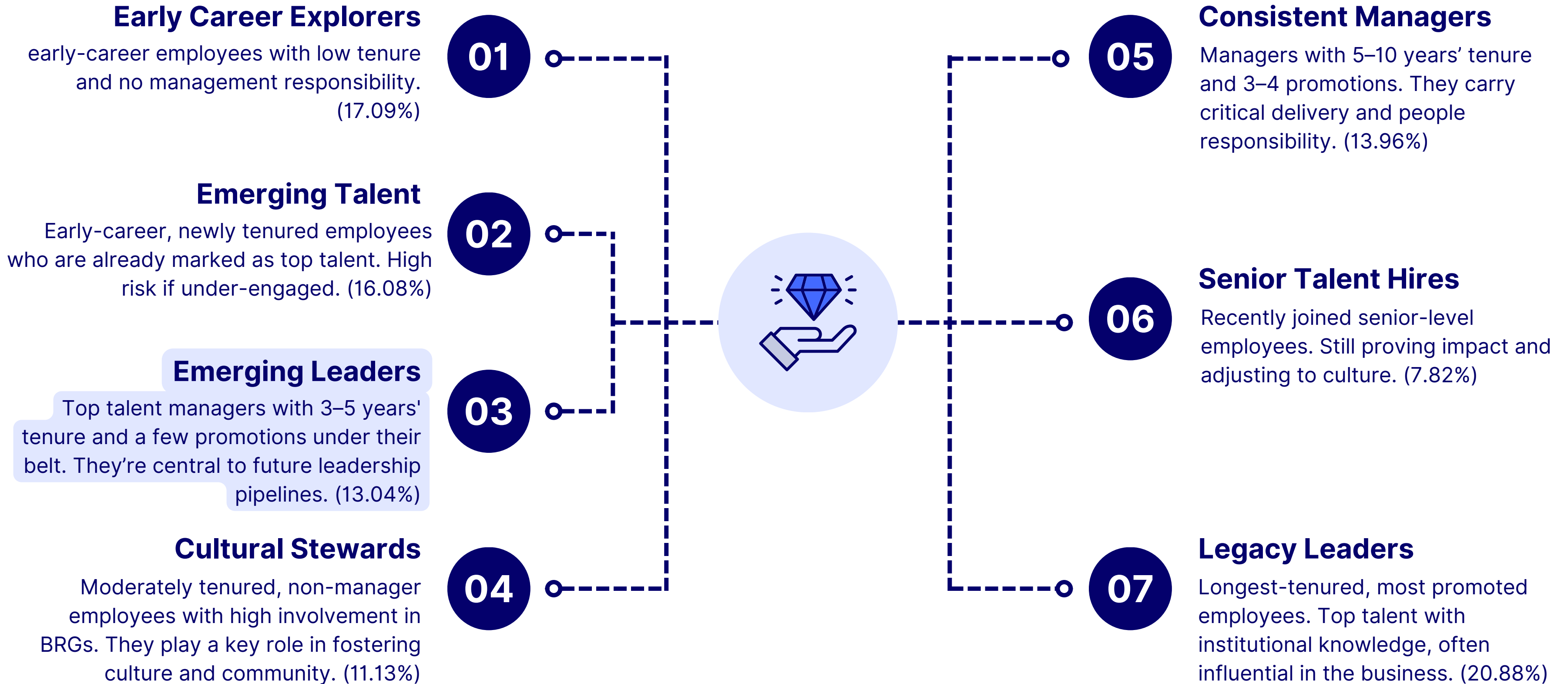
Approach

Exploratory Data
Analysis

Clustering
technique

Employee Clusters Snapshot

Seven employee types that the company must focus on:



Deep Dive: Emerging Leaders Profile

Career Stage

Mid-career, ~3-5 years in role, people managers

Promotions

3-4 promotions, already high-performing, in the low-risk promotion band

Tenure Band

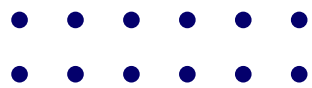
3-5 years, at-risk zone for disengagement and external offers

Life Stage

57% married, stability and life commitments influence decision-making

Role Type

Managers, influencing team experience and culture



Structured growth, future leadership visibility, impact recognition

Motivations

work-life balance, meaningful contribution

Values

Moving from operational delivery to strategic influence

Aspirations

Career plateau, lack of visibility, feeling overlooked despite contribution

Stress Triggers

Deep Dive: Why Prioritize Emerging Leaders?

“

- Emerging Leaders are **top talent**
- Already in **managerial roles**
- Have 3–5 years’ tenure, indicating commitment
- Are at a critical mid-career inflection point
- Offer **high ROI potential**, investing in this group strengthens the future leadership pipeline

”

High potential, but at risk of plateauing

- Emerging leaders have already been promoted 3–4 times, placing them in the lowest-risk attrition group from a promotion history perspective. (Attrition drops significantly after 3 promotions (6.8%) and even further at 4 promotions (2.47%))
- With 3–5 years' tenure, they're in a career stage where motivation can dip without clear advancement pathways. (Higher attrition rate of 10.14% in the 3–5 year tenure band). They may feel they've "peaked early" without new growth challenges.

Motivated by structured growth and balance

- Majority (~57%) are married, so have life commitments, suggesting they value stability alongside ambition.
- Generic 'high-potential' programs may overlook these motivators if too focused on speed over substance.

People Managers

- Emerging Leaders shape the day-to-day experience of their teams, influencing morale, engagement, and retention.
- Their role as leaders is a protective factor, with a 5.93% attrition rate vs 10.89% for non-managers.
- Investing in this group has a multiplier effect, improving outcomes not just for them, but for the teams they manage.

Recommendations for engaging Emerging Leaders



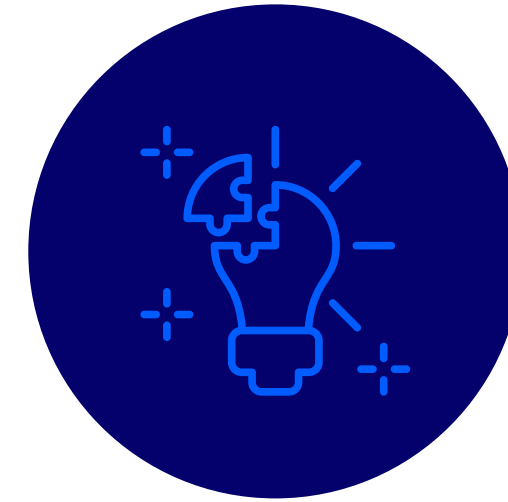
Create Strategic Growth Pathways

Offer cross-functional rotations, internal consulting sprints, or succession shadow roles



Accelerate Leadership Readiness

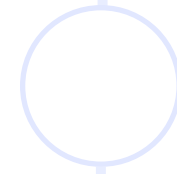
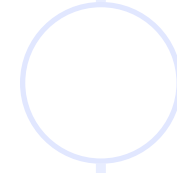
Enrol them in curated leadership academies, with focus on influence, stakeholder alignment, and strategic thinking.



Recognize Strategic Contribution

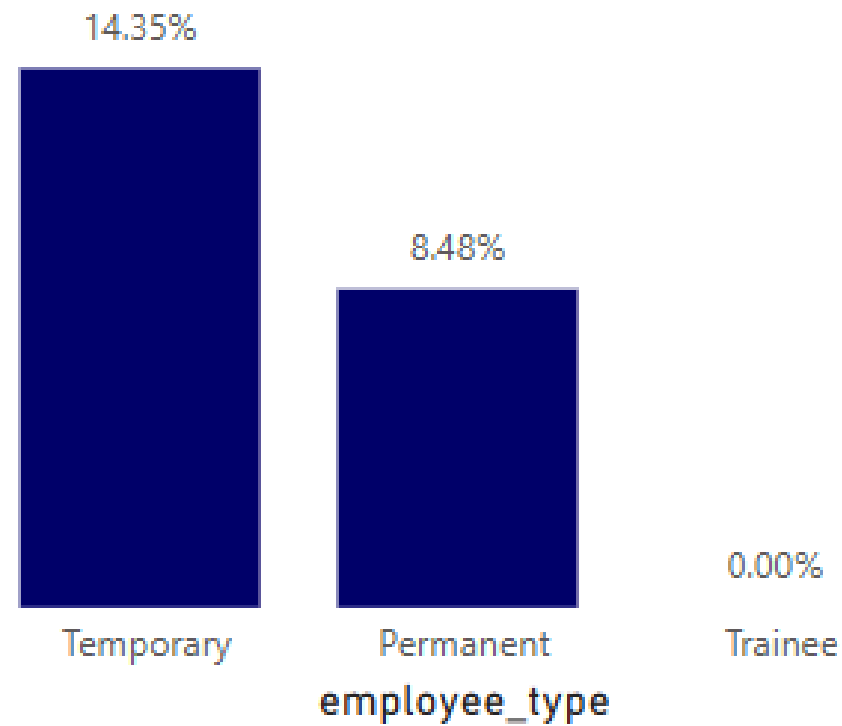
Include them in org-wide forums, innovation taskforces, increasing their Visibility

Appendix



Attrition Snapshot by Demographics

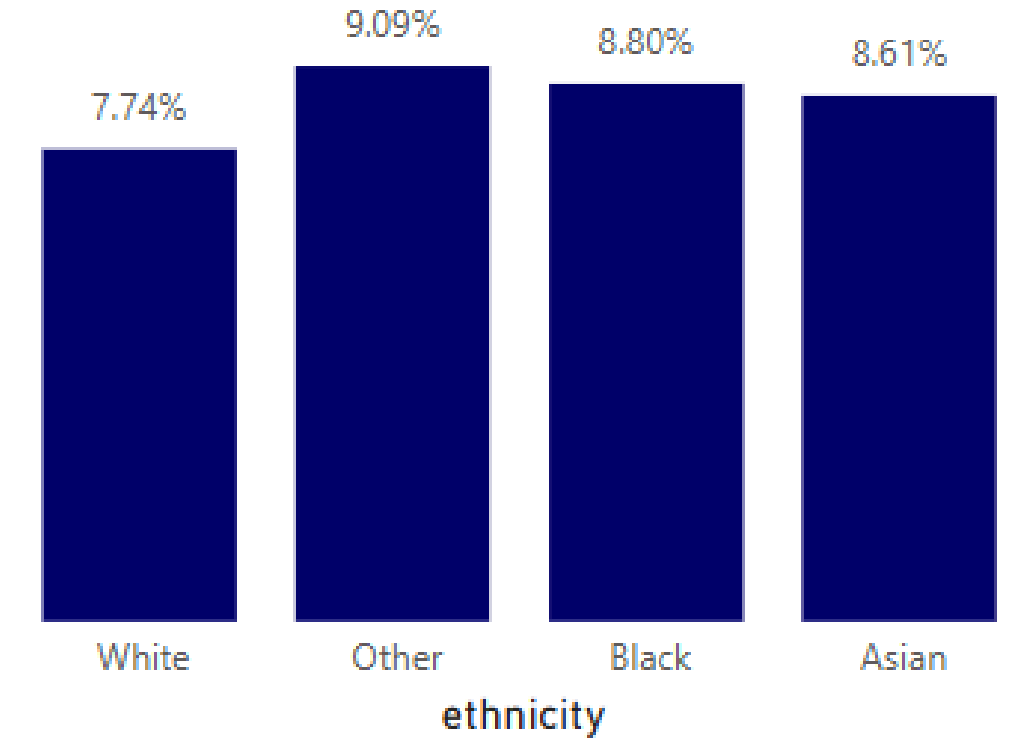
Attrition Rate % by employee_type



Attrition Rate % by gender_key



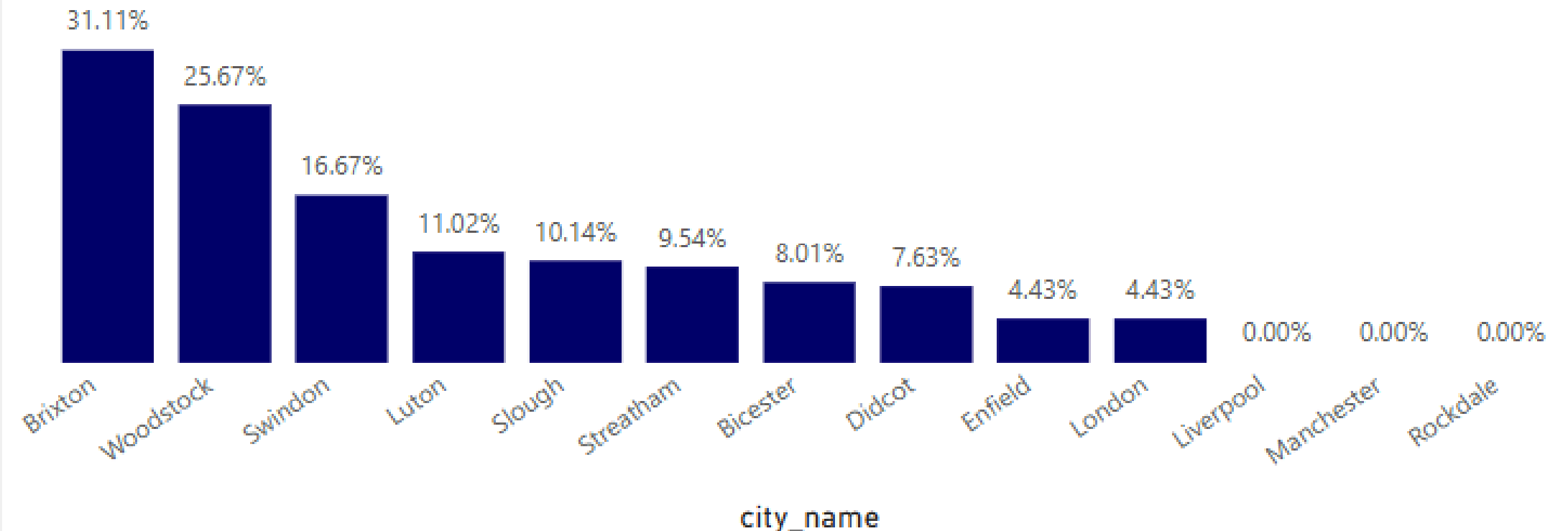
Attrition Rate % by ethnicity



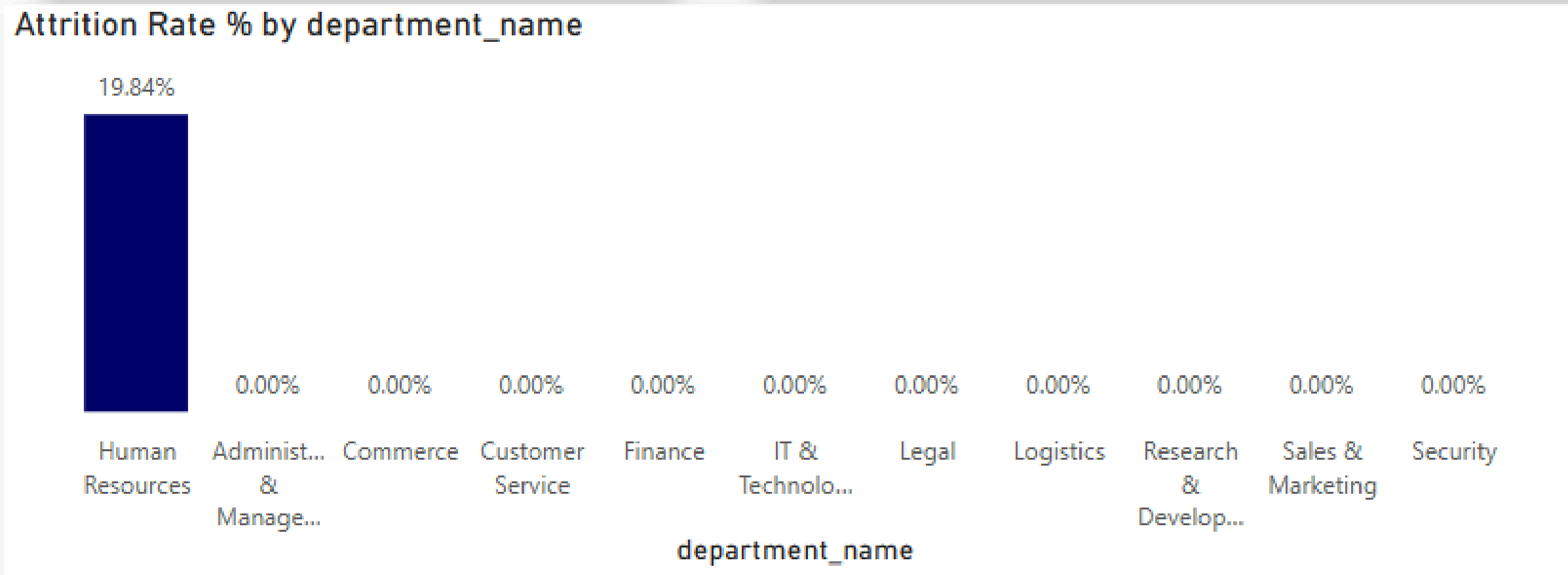
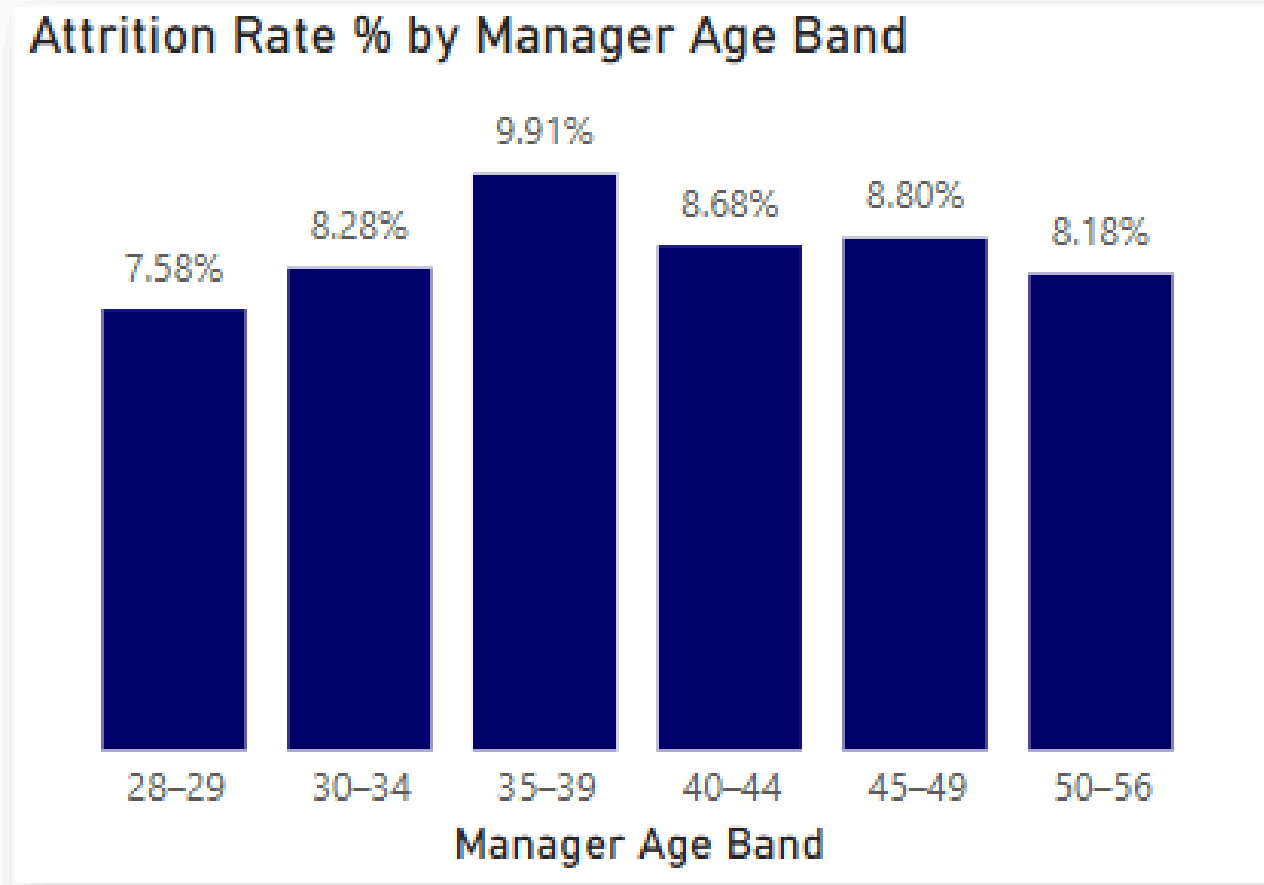
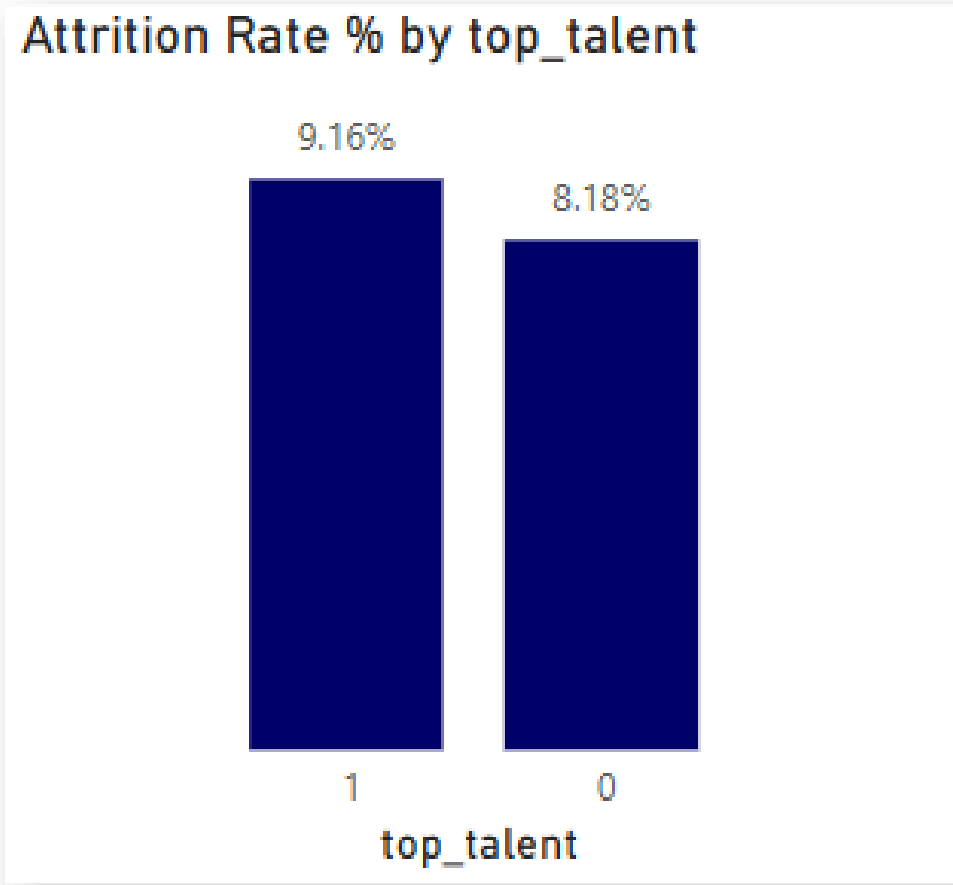
Attrition Rate % by marital_status



Attrition Rate % by city_name



Attrition Snapshot by Work Metrics



Statistical Tests

```
termination_reason
NaN          7695
Voluntary    824
Name: count, dtype: int64
```

— T-Tests (Active vs Voluntary Leavers) —

variable	mean_active	mean_left	t_stat	p_val
length_of_service	6.8120	3.9854	14.1506	0.0000
age	44.0806	43.3714	1.5472	0.1221
manager_role	0.5011	0.3058	11.4584	0.0000
top_talent	0.5019	0.5328	-1.6874	0.0918
manager_age	41.9981	41.8762	0.4236	0.6720
distance_from_work	13.3442	14.4126	-2.9231	0.0035
#promotions	2.4654	1.6117	13.9226	0.0000
business_resource_group_member	0.3418	0.1675	12.3669	0.0000

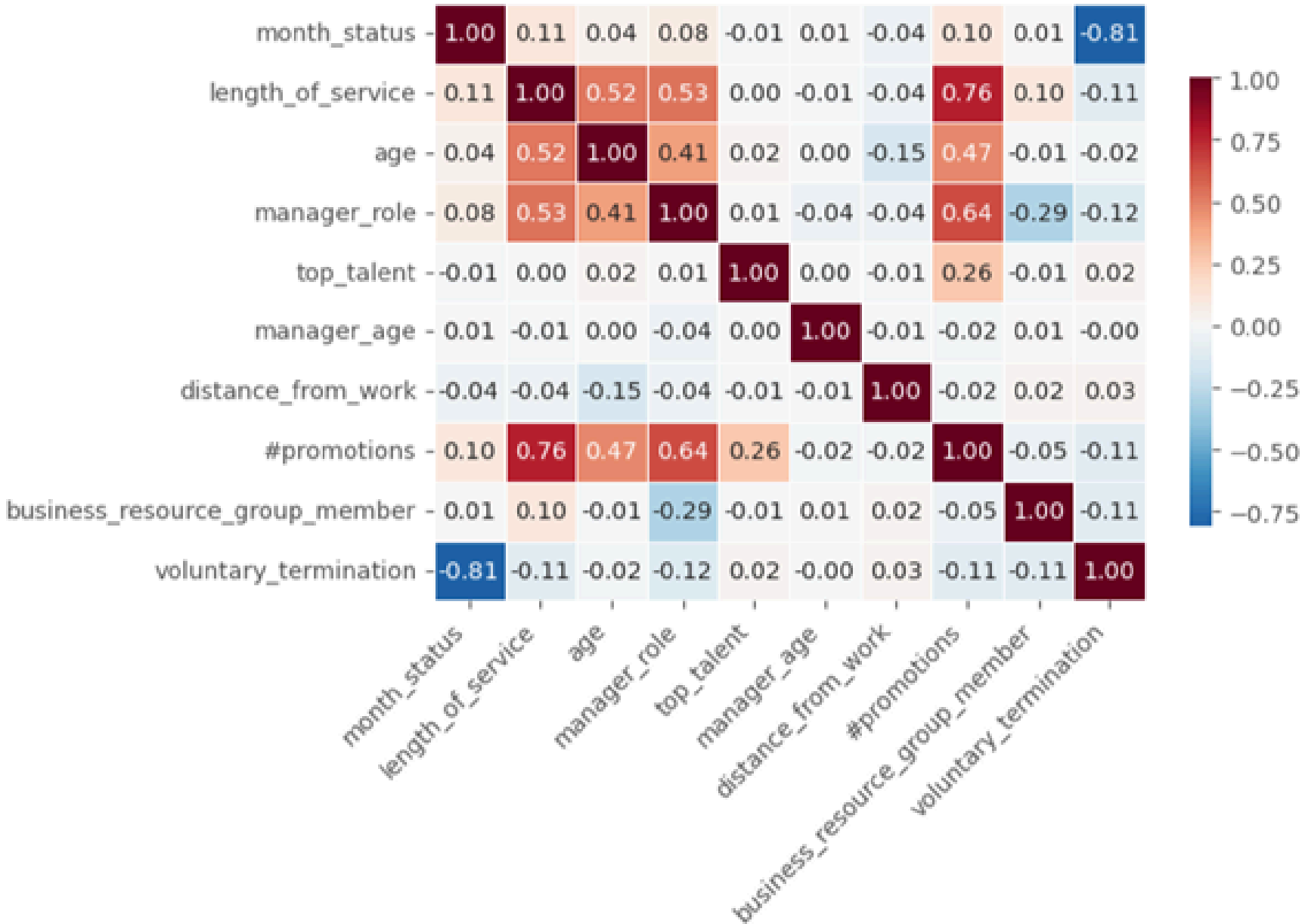
— Chi-Squares (Active vs Voluntary Leavers) —

variable	chi2_stat	p_val	dof
company	89.4740	0.0000	2
department_name	1539.2903	0.0000	10
country_name	0.0000	1.0000	0
city_name	285.3938	0.0000	11
gender_key	0.0000	1.0000	1
ethnicity	2.5598	0.4646	3
marital_status	0.1732	0.9171	2
manager_gender_key	3.4371	0.0637	1

Variance Inflation Factors:

	variable	VIF
0	month_status	21.42
1	length_of_service	5.27
2	age	16.99
3	manager_role	3.98
4	top_talent	2.46
5	manager_age	19.35
6	distance_from_work	2.71
7	#promotions	7.36
8	business_resource_group_member	1.79

Correlation Matrix - Numeric Drivers vs Attrition



Classification

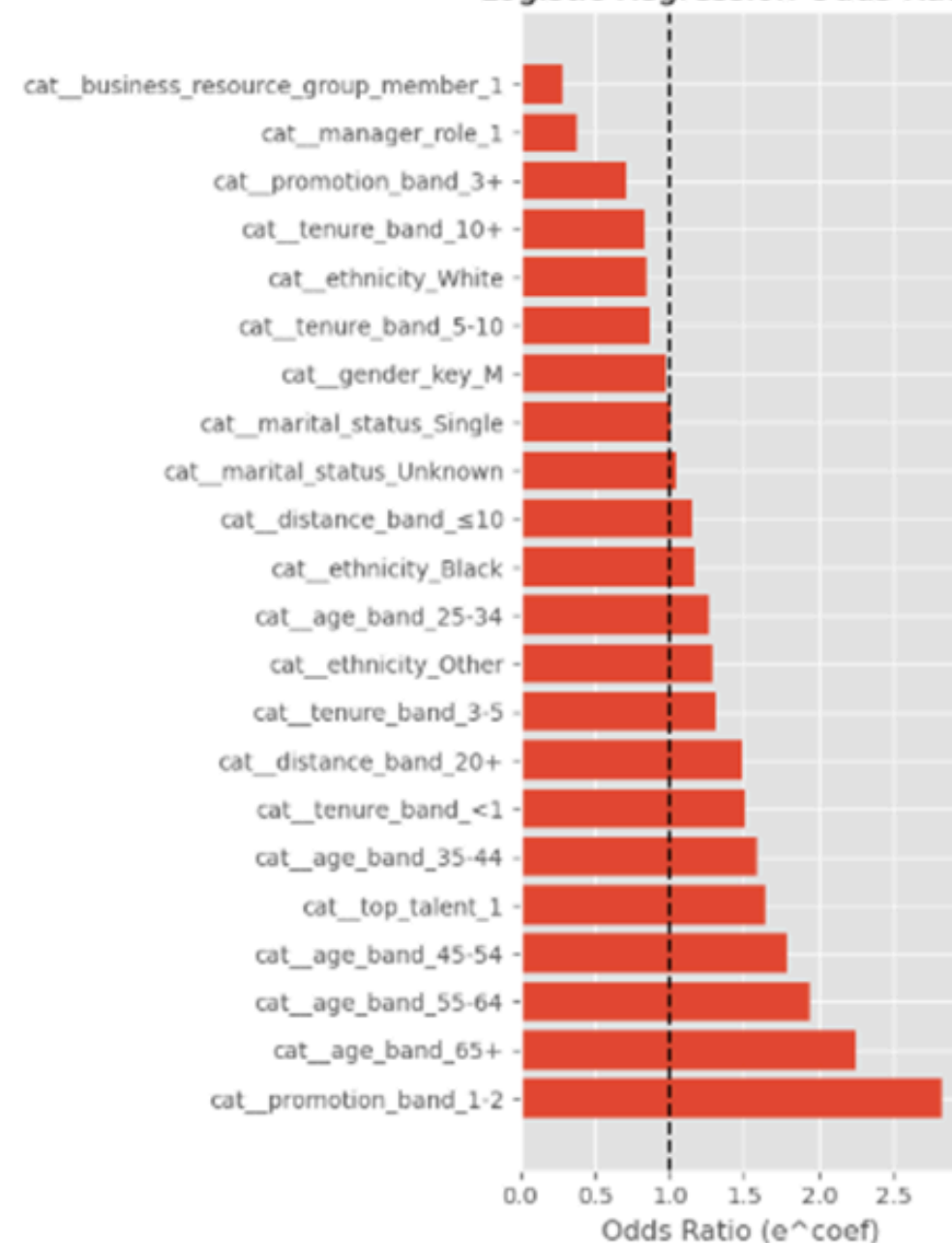
Top 5 attrition *drivers* (highest odds-ratios):

	feature	odds_ratio
0	cat_promotion_band_1-2	2.82
1	cat_age_band_65+	2.25
2	cat_age_band_55-64	1.94
3	cat_age_band_45-54	1.78
4	cat_top_talent_1	1.64

Top 5 *protective* factors (lowest odds-ratios):

	feature	odds_ratio
17	cat_ethnicity_White	0.85
18	cat_tenure_band_10+	0.83
19	cat_promotion_band_3+	0.71
20	cat_manager_role_1	0.38
21	cat_business_resource_group_member_1	0.28

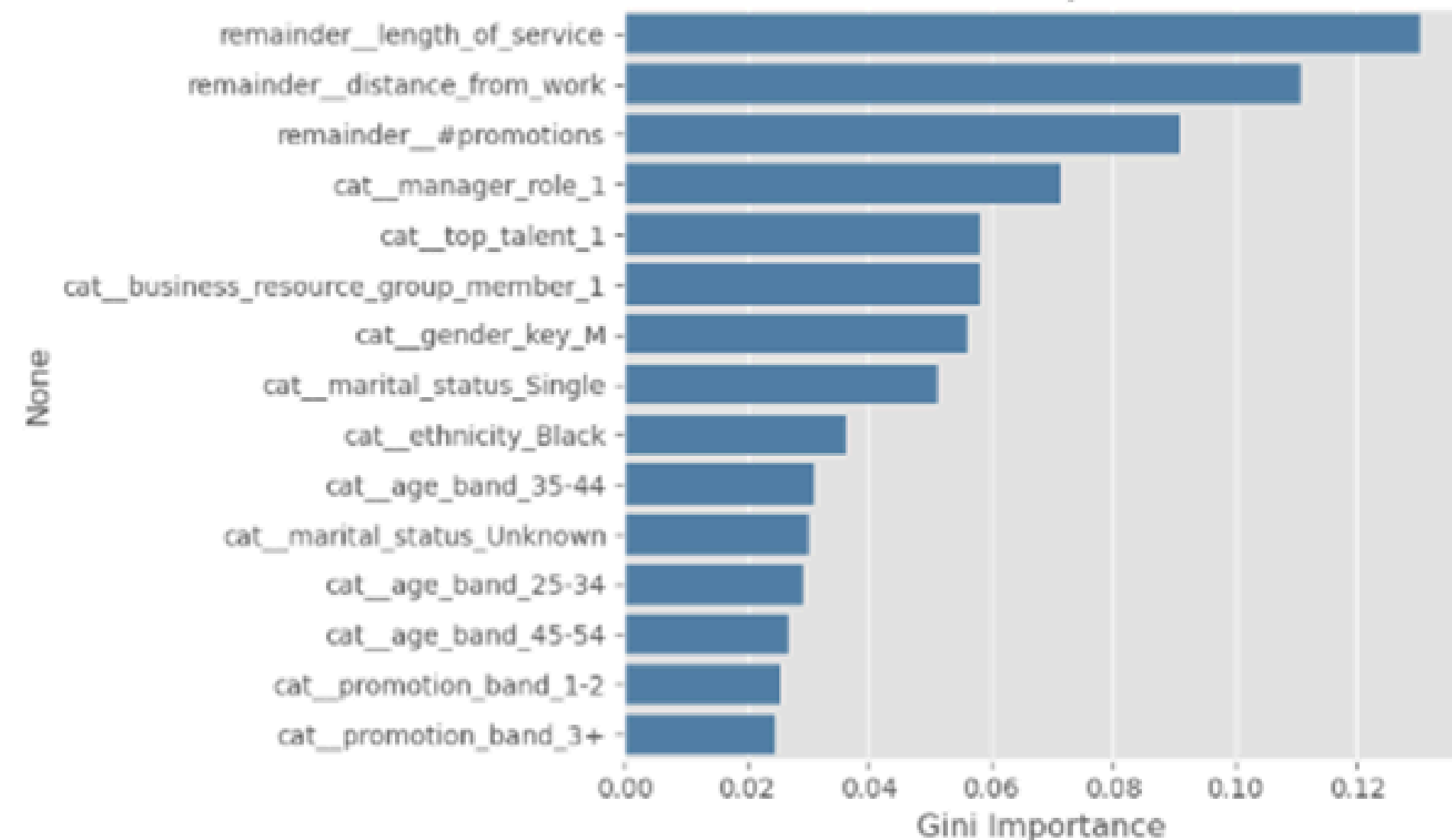
Logistic Regression Odds Ratios



Random Forest

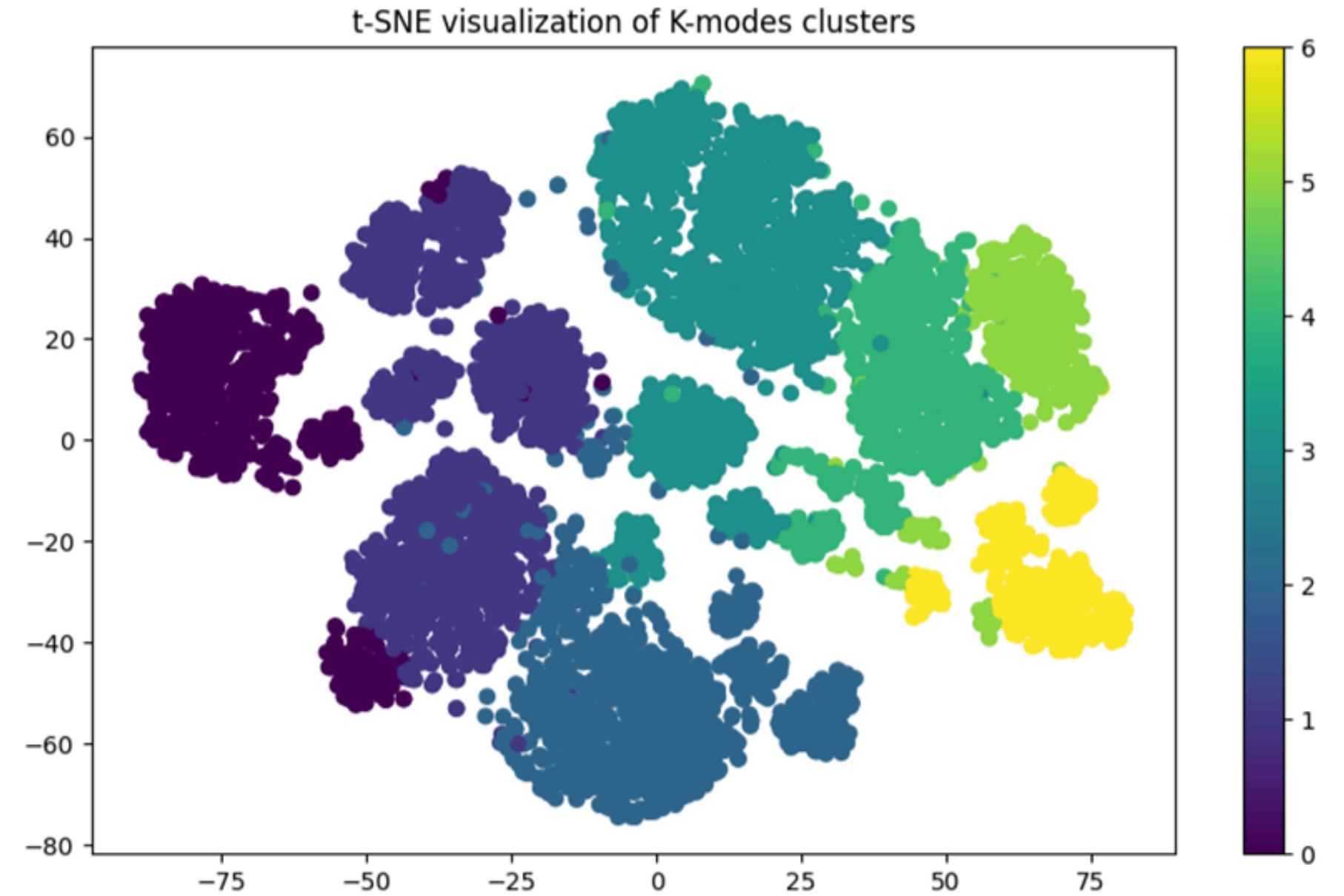
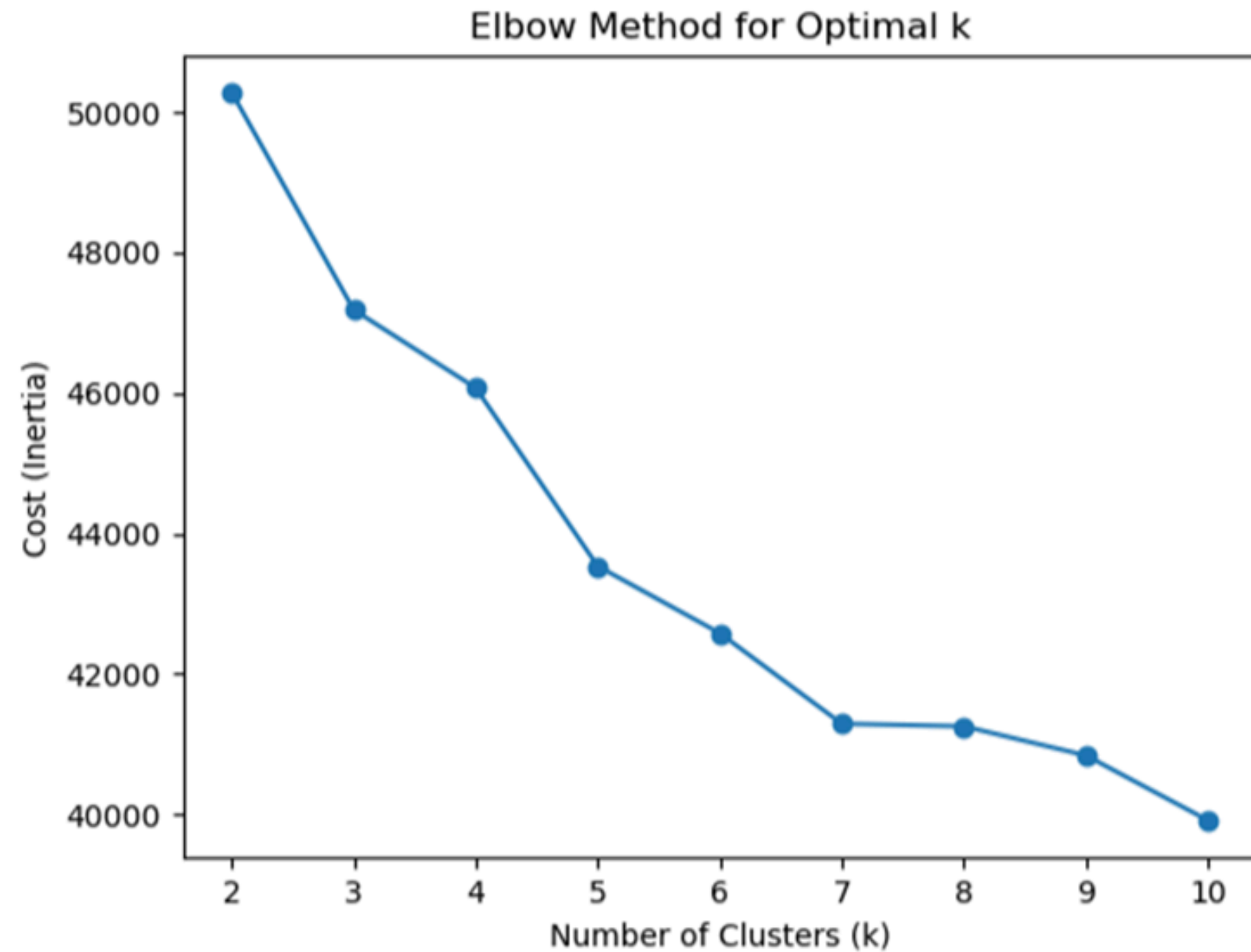
RDC-AUC : 0.762 | Acc: 0.934 | P: 0.017 | R: 0.113 | F1: 0.029

Random Forest - Top 15 Gini Drivers

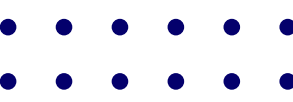


- 60–70% lower quit-risk for erg and manager roles comes from: odds ratios of ~0.3–0.4, indicating strong protective effects.
- Logistic Regression (Promotion Band = 1–2)
 - Odds Ratio: 2.44
 - p-value: 3.7e-14
 - Employees with 1–2 promotions have 2.44× higher odds of quitting compared to those with zero promotions.

Clustering : K modes



Note: t-SNE visualisation of the 7 k-modes clusters. While this demonstrates clean cluster separation, relative distance between clusters is not meaningful due to dimensionality reduction



Assumptions made for the analysis

- Due to the uneven distribution of employees Company C, D and E are considered as one company
- Terminating employees are automatically moved to HR department by the HRIS system, hence active employees have departments while terminated employees all show HR as department
- Involuntary terminations can have various reasons, hence they are not considered in any analysis