

Name : Rhea Mohan Vidhani

Internship : Business Analyst

UMID : UMID27082556482

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Code file 1:

<https://colab.research.google.com/drive/12ekRAvwIANZDlU7xMHCgOsfZZxRdyq7?usp=sharing>

Code file 2 : https://colab.research.google.com/drive/1yjOfB8ebyJl3Pk9t_qyyv3_Y14ak1b7m?usp=sharing

Code file 3 :

<https://colab.research.google.com/drive/1ED9ZhB4Z5b49JiyNfHWBzHPxNhruEkSm?usp=sharing>

1.Introduction

Human Resource analytics enables organizations to leverage employee-related data to optimize workforce performance, improve retention, and enhance overall organizational effectiveness. By analyzing key metrics such as employee demographics, compensation, performance, engagement, and tenure, HR analytics provides data-driven insights that support evidence-based decision making. The objective of this report is to identify patterns and relationships between workforce variables, uncover drivers of performance and turnover, and derive actionable insights to support HR planning, recruitment, and retention strategies.

2.Dataset

2.1 Dataset Description

Column Name	Description
Salary	Annual salary
Position	Job title or role
Sex	Gender of employee
MaritalDesc	Marital status description
TermReason	Reason for termination or employment status
EmploymentStatus	Full-time, part-time, contract, etc.
Department	Organizational department
ManagerName	Manager or supervisor name
RecruitmentSource	Source of recruitment (referral, website, etc.)
PerformanceScore	Employee's latest performance score
EngagementSurvey	Engagement survey score
EmpSatisfaction	Self-reported satisfaction level
SpecialProjectsCount	Number of special projects completed
DaysLateLast30	Days late to work in past 30 days
Absences	Total absences for current period

Age	Age of employee in years
TerminatedFlag	1 if terminated, 0 otherwise
Tenure_Years	Years of service
Days_Since_Last_Review	Days since last performance review
Team_Size	Size of employee's work team
Hire_Season	Season in which employee joined (e.g., Winter, Fall)

2.2 Statistical Validation

2.2.1 Summary Statistics

The workforce is predominantly composed of production-oriented roles, with “Production Technician I” representing a disproportionately large share of headcount, indicating heavy concentration in operational labor rather than diversified functional talent. Employees earn an average salary of ~\$69K, but the wide salary range (min \$45K, max \$250K) and high standard deviation signal a steep pay hierarchy, which may reflect seniority variation but can also imply internal pay inequity risks if not linked to transparent performance criteria. Despite relatively high engagement (mean score 4.1/5) and satisfaction (3.89/5), productivity contributions appear uneven, with low median special project involvement and moderate absenteeism, suggesting motivation exists but is not systematically leveraged into discretionary effort or innovation. Tenure averages nearly nine years and age averages 45, pointing to a mature, stable workforce; however, a 33% termination rate signals underlying talent retention challenges that are not age-related but potentially tied to job structure, manager influence, or limited career progression.

Categorical trends reinforce this: the production department dominates staffing but also likely experiences the highest turnover pressure, single employees are most represented, and most hires originate from Indeed, highlighting dependence on external recruitment channels rather than internal mobility pipelines. Furthermore, with “Fully Meets” as the most common performance score, there may be a culture of average performance with limited differentiation, potentially limiting reward alignment and hindering high-performance progression. Overall, HR should focus on strengthening performance differentiation, redesigning job enrichment in production roles, and enhancing retention strategies—especially in dominant job categories—to convert engagement into productivity and reduce the high termination risk.

2.2.2 Chi-Square Test

The Chi-square results indicate that employment dynamics in the organization are strongly structured around job role, departmental assignment, and managerial influence rather than random variation. Extremely significant relationships between Position, Department, and Manager Name suggest a strongly hierarchical and siloed organizational structure in which specific managers oversee distinct roles and departments, potentially limiting cross-functional exposure and career mobility. The very strong associations between Term Reason and Employment Status indicate that termination events are not uniform but strongly dependent on the employment category (e.g., full-time vs. temporary), suggesting different risk profiles and potentially different experience or performance standards across employee types. Recruitment Source shows meaningful associations with multiple variables—especially Department, Employment Status, and Position—highlighting that different recruitment channels pipeline talent into specific job roles and organizational segments; this suggests an opportunity for tailoring recruitment strategies to role-specific needs rather than a one-size-fits-all approach. Furthermore, the relationship between Employment Status and Performance Score, and between Term Reason and Performance Score, implies that performance ratings

may drive, or at least correlate with, employment separation decisions, indicating either effective performance-based exit practices or potential bias in evaluation systems. Finally, demographic links (Marital Status with Employment Status and Recruitment Source) show subtle but nontrivial segmentation, possibly reflecting lifestyle-driven job preference or recruitment bias. Overall, the results point to a structured but siloed workforce ecosystem in which hiring, managerial oversight, and performance processes are tightly interconnected, influencing both employee lifecycle outcomes and organizational talent flows. This structure may help operational stability but could hinder adaptability, talent agility, and retention if not managed proactively through cross-functional development and equitable HR policies.

2.2.3 ANOVA (One way test)

The ANOVA results reveal that several core HR outcomes—such as salary levels, tenure, absences, lateness, productivity, and engagement—vary significantly across categorical groups, indicating structural rather than random differences in employee experience. Job roles and departments exert the strongest influence: positions and departments explain large variance in salary, team size, special project involvement, and tenure, suggesting that organizational design concentrates resources, career progression, and workload unevenly across functional areas. Notably, the extremely significant relationship between performance score and absenteeism/lateness implies that performance issues are behaviorally manifested, highlighting an opportunity for early intervention using attendance data as a leading indicator of low performance. The strong associations between employment status and tenure, lateness, and review frequency imply distinct performance management expectations for full-time, part-time, or contract workers, which may reflect operational needs but also risk inequity in development opportunities. Manager-level effects are also prominent: salary, project allocation, and tenure vary substantially by manager, indicating that managerial discretion plays a significant role in reward distribution and talent development, which may contribute to employee perception of fairness or dissatisfaction. Additionally, termination drivers are tied to tenure, performance, and attendance variables, suggesting that exits are more prevalent among employees with short tenure, poor attendance, or stagnant performance history, underscoring the importance of onboarding quality and early performance support. Finally, recruitment source impacts team size, salary, review frequency, and tenure, highlighting that sourcing channels pipeline talent with distinct characteristics and outcomes—meaning recruitment strategy can actively shape workforce quality and stability. Overall, the findings indicate that performance and retention outcomes are not random but shaped by organizational structure, manager practices, and employment models, emphasizing the need for standardized performance processes, equitable talent development, and role-specific workforce planning.

2.2.4 Tukey Post Hoc

The results reveal a structurally segmented organization where developmental opportunities, performance outcomes, and compensation vary sharply by department, position, and managerial context. Technical and knowledge-based departments such as IT/IS and Software Engineering receive substantially more special project involvement than Production, indicating that innovation, visibility, and career development are concentrated among high-skill functions. Production staff, despite forming a significant share of the workforce, operate in large, standardized teams with limited exposure to cross-functional initiatives, which may hinder engagement, capability building, and internal mobility. This creates a two-speed workforce: one group benefiting from growth-oriented work, and another confined to routine execution with fewer pathways for progression.

Performance results show a tight link between employee outcomes and behavioral indicators. Employees rated “Needs Improvement” or placed on a PIP exhibit significantly higher lateness than high performers, suggesting that poor attendance is strongly correlated with performance deterioration. Rather than being random variation, lateness acts as a meaningful early-warning signal of disengagement, burnout, or

performance risk. This reinforces the need for proactive monitoring and early intervention strategies to prevent escalation into formal performance management.

Compensation patterns reveal extreme stratification. Technical and leadership roles command much higher salaries—often tens of thousands more—than administrative, sales, and production roles, reflecting a strong premium on specialized skills and strategic accountability. Departments with higher salaries also have greater project involvement, suggesting that both financial and developmental resources are disproportionately concentrated in innovation-centric units. While effective for attracting technical talent, this structure may fuel perceptions of inequity among operational staff who lack access to higher-value work and advancement pathways.

Turnover patterns show that both voluntary and involuntary exits occur early in tenure, while long-tenured employees tend to remain. This suggests that turnover is driven less by long-term dissatisfaction and more by early mismatches in fit, support, or career trajectory. Moreover, employees who exit experience significantly longer gaps between performance reviews—often 1,000 to 1,900 days—indicating that inconsistent or neglected feedback precedes departure. This points to a systemic performance management gap where at-risk employees are not engaged, supported, or held accountable in time to prevent turnover.

Recruitment source impacts employee experiences as well. Hires from different sources operate in teams of different sizes, receive different levels of project exposure, and vary in review frequency, suggesting that talent pipelines inadvertently sort employees into unequal work environments. This contributes to uneven access to development and oversight across the workforce.

Geographic differences add another layer of segmentation, with states differing in age profiles, team structures, and project involvement. These disparities, driven by market dynamics or local operations, can shape long-term career experiences and equity if not actively managed.

Employment status further differentiates workforce outcomes: active employees show higher engagement and better attendance, while both voluntary and involuntary exits exhibit early behavioral and structural signs of disengagement. Voluntary exits display subtle disengagement signals, while involuntary exits reflect more acute performance breakdowns—supporting targeted intervention strategies for each pathway.

Taken together, the results highlight an organization divided by function, geography, recruitment channel, and managerial influence, where access to developmental capital is highly uneven. Technical and managerial hubs operate as innovation engines with high compensation and strong career trajectories, while operational groups face limited mobility, weaker feedback cycles, and lower engagement. Without intervention, these divides risk entrenching structural inequities that depress retention, performance, and internal capability development.

A strategic response would involve broadening access to engagement drivers—such as feedback, learning opportunities, and meaningful work—to groups historically excluded from them. Standardizing compensation frameworks, performance review cycles, and project allocation processes could help reduce structural disparities, strengthen mobility, and improve retention. Ultimately, the goal is to evolve from a segmented workforce to an integrated talent ecosystem where opportunity is driven by capability and potential rather than department, manager, or recruitment origin.

2.2.5 ANOVA (Two way test)

The two-way ANOVA results indicate that employee outcomes such as engagement, satisfaction, attendance, team size, and tenure are shaped far more by a combination of performance behaviors and

employment status rather than static demographics like sex or marital status, highlighting that structural, role-based, and behavioral factors explain workforce variability more than individual identity. PerformanceScore is consistently the strongest predictor of EngagementSurvey and EmpSatisfaction, with highly significant interactions across multiple models, meaning that the relationship between performance and workplace sentiment is not uniform but varies depending on employee personal context or employment characteristics. In other words, the same performance level translates into different engagement outcomes depending on who the employee is and how they are situated in the organization—suggesting that HR should not assume that boosting performance automatically increases engagement without addressing contextual needs.

EmploymentStatus repeatedly emerges as a major determinant of outcomes—including lateness, team size, satisfaction, and termination risk—confirming the existence of distinct labor subpopulations in the workforce. Fixed-term, terminated, or voluntary exit groups display different patterns of attendance, performance, and review cycles, with strong interaction effects showing that turnover risk is amplified when status combines with poor performance or disengagement. Importantly, Hire_Season consistently predicts salary, absences, and project participation, suggesting that timing of onboarding affects compensation strategy, workload integration, and employee stability. Employees hired in certain seasons may have better access to resources or lower operational pressures, leading to more favorable outcomes.

A critical finding is that termination risk is jointly predicted by demographic context (MaritalDesc), employment type, and performance behaviors, with highly significant interaction terms, implying that termination patterns are not purely performance-driven but shaped by more complex social and structural dynamics. Additionally, salary variation is only weakly explained by individual demographics; instead, interaction between personal traits and performance context drives compensation differences, underscoring potential inequities when contextual factors compound. Overall, the results highlight that the workforce is not uniform, but segmented by employment type, performance trajectory, and onboarding context—suggesting that a one-size-fits-all HR policy is insufficient. To reduce turnover, improve fairness, and enhance performance, HR should tailor interventions by status group, align performance management with engagement drivers, and address seasonal onboarding disparities that influence long-term employee outcomes.

3. Business Insights

3.1 Compensation and Rewards Analysis

The compensation and rewards landscape reveals structurally different labor markets within the organization, which shape both salary levels and turnover patterns. Production dominates headcount and exits, signalling a large operational workforce with relatively low pay and limited differentiation in compensation between retained and separated employees. This creates an environment where churn is normalized, and separation does not correlate strongly with salary band or performance tier. In contrast, technical departments such as IT/IS and Software Engineering command significantly higher salaries across retained and terminated employees, reflecting a premium talent market where turnover is driven less by dissatisfaction and more by external mobility and competitive poaching. These technical exits frequently occur at high salary levels, suggesting a talent segment that is mobile, in demand, and costly to lose. The Executive Office occupies the opposite end of the spectrum, with very high compensation and zero turnover, reflecting limited incumbency, strong organizational anchoring, and the unique replaceability dynamics of senior leadership roles.

Across job roles, turnover reflects how compensation interacts with career pathways and labor market opportunities. Senior and strategic technical roles, such as IT Director, CIO, or BI Director, show extremely

high compensation with no observed turnover, while mid-level technical roles such as Database Administrator, Network Engineer, and Software Engineer exhibit notable voluntary exits despite high pay. These departures often occur at salary levels higher than those of retained peers, suggesting late-stage career mobility, end-of-cycle departures, or knowledge-intensive roles leaving for greater market value. Production roles, in contrast, show broad-based turnover among low- to moderate-paid employees, with minimal salary stratification between those who stay and those who leave, pointing to a transactional labor environment that prioritizes throughput over retention. The pattern observed in Sales—limited turnover, mainly at mid-managerial levels—indicates that compensation in commercial roles is less linked to retention volatility than in highly specialized technical functions.

Age-based salary dynamics provide further evidence of segmentation. Employees in their 30s, a substantial share of the workforce, show relatively uniform salary ranges across performance levels, and only slight pay gaps between retained and separated employees, implying that turnover in this cohort reflects career mobility rather than performance misalignment. A notable anomaly within this group is that employees rated Needs Improvement but retained earn higher average salaries than other performance categories, suggesting a segment of expensive, underperforming talent that remains in role due to either specialized value or structural inertia. The 40–49 cohort commands the highest compensation overall, particularly among high performers, reflecting peak career productivity; exits within this band are rare but financially impactful due to high salary ceilings. Employees aged 50–59 display a different pattern, with retained performers earning higher wages but terminated employees earning substantially less, reflecting a more polarized compensation structure that appears to sort employees more distinctly by capability. At the uppermost age band, employees 60 and above defy typical retirement economics: very high salaries, including extremely high outliers, persist among retained staff, while terminations are not concentrated among low performers, but among senior, high-earning individuals, suggesting departures driven by retirement, restructuring, or voluntary separation rather than declining performance. Across all groups, the near absence of employees aged 20–29 indicates either hiring lag, low early-career recruitment, or insufficient tenure for meaningful evaluation.

Departmental differences by age further emphasize how the organization allocates compensation strategically. IT/IS and Software Engineering consistently pay above the organizational average across all age tiers, and turnover within these departments remains low relative to population size, reinforcing their position as high-value talent clusters with elevated retention strength. Production and Sales display markedly lower compensation structures and higher termination volumes within the 30–49 age group, suggesting that employees in operational roles face greater performance pressure or cost-based workforce cycling during mid-career. In the majority of departments and age groups, terminated employees receive lower salaries than retained employees, but exceptions in technical departments reveal that highly paid mid-career roles are occasionally separated at compensation levels above those of retained peers. These separations likely represent targeted exits of expensive talent, the departure of highly skilled incumbents due to external pull, or strategic restructuring. The presence of a handful of extremely high-paid retained Executives aged 60+, alongside terminations in lower-paid operational roles within the same age band, demonstrates selective retention based on role criticality rather than tenure or age alone.

Tenure patterns show that employment duration strongly stabilizes compensation and separation likelihood. The highest termination volumes occur in the first five years, particularly during the first two, reflecting high-risk early employment periods. Production absorbs the majority of early exits at low wages, indicating a high-churn, low-cost labor model. In contrast, early exits from IT/IS and Software Engineering are fewer in number but occur at much higher salary bands, with wide compensation ranges, reflecting costly mismatches between role expectations and skill supply. Between two and five years, the same segmentation persists: Production continues to experience low-wage churn, while technical, software, and sales roles lose

high-paid employees at a relatively early career stage, indicating that early separation within skill-intensive roles is economically significant. Beyond five years, turnover becomes rare, and compensation escalates significantly, particularly in technical roles, reflecting organizational investment in high-value incumbents. This creates a barbell-shaped risk profile: the organization endures high churn and volatility among early-tenure employees—particularly in technical functions where losses are costly—followed by long-term retention and high compensation stability for those who remain.

Overall, the compensation–turnover ecosystem is defined by three structural dynamics: a high-volume, low-wage labor segment in Production that experiences persistent churn independent of salary; a high-paid, highly mobile technical segment where turnover reflects market competition rather than dissatisfaction; and a small, highly compensated leadership segment with minimal separation. These dynamics illustrate how salary structures, career stage, and labor market conditions jointly shape workforce stability and economic risk across the organization.

3.2 Performance Management

The data reveals a complex relationship between performance ratings, compensation levels, and turnover risk, indicating that pay alone does not secure workforce stability unless aligned with performance outcomes, job complexity, and career trajectory. In IT/IS, top-performing employees who exceed expectations command very high average salaries and exhibit strong retention, suggesting a tight alignment between capability, rewards, and organizational expectations. However, turnover among competent mid-tier performers, particularly those who “Fully Meet” expectations, suggests that performance volatility or misalignment between individual capability and job demands contributes to separation even at high pay levels. Software Engineering displays similar dynamics, with turnover occurring even among high-performing employees at elevated salaries, implying that technical talent experiences strong labor-market pull that overrides retention mechanisms, regardless of compensation competitiveness.

Production roles demonstrate a fundamentally different pattern. Performance ratings are broadly distributed and turnover is substantial across all performance levels, including among “Fully Meets” and even some “Exceeds” employees. Compensation within this domain remains tightly clustered, reflecting a commoditized labor structure where repetitive work, limited career progression, and constrained pay ceilings create systemic disengagement and persistent mobility. This environment produces high-volume turnover that is structurally decoupled from performance differentiation, suggesting that stability in these roles is not driven by performance management outcomes but by more fundamental aspects of job design and occupational context.

Across the workforce, performance ratings segment role outcomes but interact unevenly with salary levels depending on employment status. The bulk of active employees are “Fully Meets” performers earning moderate pay, indicating a stable core workforce whose compensation reflects competency and continuity rather than differentiation. High performers earn substantially more and are retained effectively, although their wide salary ranges hint at variability in pay structures, potentially influenced by role-specific market forces, tenure, or internal leveling decisions. Termination outcomes reflect a performance management process that prioritizes separation over remediation, especially among employees with “Needs Improvement” or PIP ratings, who experience a high incidence of termination alongside lower salaries, revealing a punitive performance culture where underperformance is addressed primarily through exit rather than development. However, the most striking turnover pattern emerges among “Fully Meets” performers, who account for the majority of voluntary exits. This group represents competent employees who are not underperforming but may experience limited career mobility or insufficient alignment between compensation and external opportunities, making them vulnerable to external recruitment.

Department-level differences reinforce these dynamics. IT/IS and Software Engineering provide high compensation for both “Exceeds” and “Fully Meets” performers, yet experience meaningful termination among mid-performing specialists, indicating the effects of competitive market pressures, high-demand skillsets, and possibly internal restructuring. In Production, compensation appears largely disconnected from performance, and turnover remains widespread, underscoring a labor environment where talent mobility is influenced by occupational structure rather than individual capability. Sales roles reflect mid-level compensation with selective turnover, particularly among solid performers, which may reflect cyclical revenue performance, incentive model volatility, or external competition for sales talent. Administrative functions display a pattern where low-paid “Fully Meets” employees face termination, consistent with workforce optimization in operational support roles. Executive and senior leadership roles exhibit extremely high compensation levels and complete retention, indicating a stable leadership nucleus insulated from workforce volatility, likely due to role scarcity, institutional authority, or strategic influence.

At the position level, compensation and turnover reflect occupational segmentation rather than uniform performance dynamics. Senior leadership and high-level data roles command extremely high pay with zero turnover, demonstrating strong organizational anchoring. In contrast, mid-senior specialists in technical functions experience notable turnover despite high compensation, particularly among competent performers, suggesting these roles are highly susceptible to market poaching or internal stagnation. Software engineers present persistent attrition even among high performers, indicating that compensation is insufficient as a standalone retention mechanism in a competitive technology labor market. Production roles, especially Production Technicians, represent the largest and most volatile workforce segment, with high turnover occurring across all performance tiers and tight salary clustering, reinforcing the presence of a commodity labor environment characterized by job strain, low differentiation, and frequent exits. Notably, several roles exhibit higher salaries for terminated employees than retained ones, revealing cases where the organization loses high-paid, experienced employees whose departure represents both knowledge displacement and cost burden.

Overall, the patterns across departments, roles, performance tiers, and salary levels illustrate two distinct turnover archetypes. First, a high-volume churn environment in Production and other low-skill roles, where job design and labor-market characteristics drive constant mobility regardless of performance. Second, a competency-driven attrition model in technical and specialist roles, where high-skill employees exit due to market dynamics, career limitations, or compensation compression, often at significant cost to the organization. The organization is effective at retaining its top leadership and elite technical performers, but faces substantial risk of knowledge loss among mid-tier specialists and persistent operational churn among mass labor roles.

3.3 Diversity and Inclusion

The data reveals intricate intersections between gender, performance, compensation, and turnover, demonstrating that salary differentiation does not uniformly translate into retention and that exit patterns often reflect structural, demographic, and role-based dynamics rather than pure performance outcomes. Among high performers, male employees earn substantially more than female counterparts, highlighting gendered compensation disparities even at the top of the performance spectrum. Yet salary does not uniformly protect tenure: male high earners show lower termination, while female high earners in technical roles experience meaningful exits at elevated salary levels, suggesting different risk profiles across genders when occupying high-skill, high-compensation positions. Mid-performing male employees display a notable pattern wherein terminated individuals earn slightly more than retained peers, indicating that men with higher pay may be more susceptible to exit at mid-performance levels, whether through voluntary mobility

or targeted workforce restructuring. Conversely, female terminations at comparable performance levels occur at slightly lower compensation points, hinting at satisfaction gaps or performance alignment issues rather than cost-based triggers. A striking anomaly emerges in low-performance segments: males rated “Needs Improvement” who remain employed earn exceptionally high salaries, whereas their terminated peers earn markedly lower pay, reflecting a bifurcated performance–compensation structure among men that is not mirrored among women, who display more homogeneous compensation outcomes across exit statuses. Despite such nuances, turnover peaks not among low performers but among satisfactory ones, reinforcing that exits among competent employees are driven by underlying organizational or market dynamics rather than performance deficits.

Marital status introduces additional segmentation in how compensation and exit outcomes manifest. Single employees who exceed expectations earn the highest salaries across all groups but still exhibit noteworthy turnover, reflecting a high-performing yet mobile workforce whose exits are not tied to underperformance. Married employees, by contrast, receive the highest compensation among “Needs Improvement” performers retained in the organization, implying salary continuity based on seniority or tenure rather than performance adjustments, which may embed long-term cost inefficiencies. Turnover among “Fully Meets” performers is prominent for both married and divorced employees, especially in operational and production settings, indicating systemic disengagement among incumbent talent who meet expectations but are not advancing. Divorced employees show concentrated turnover in production roles at mid-performance levels, suggesting vulnerability linked to job strain rather than skill deficiencies, while separated and widowed employees, though few in number, present modest compensation and relatively stable retention, signifying neither distinctive strategic value nor acute risk. These demographic segments appear to operate within distinct behavioral profiles: single employees as mobile and opportunity-driven, married employees as high-cost incumbents with variable stability, and divorced employees as highly exposed in labor-intensive settings.

Gendered turnover patterns are further influenced by department and role. In technical occupations, women and men both occupy high-skill positions, but exits manifest differently. Female technical talent is often lost at higher compensation levels, reflecting exits that occur at seniority or peak productivity points, while male technical exits skew toward mid-performing specialists, suggesting mobility or performance-alignment pressures. Production roles, which represent the largest labor cluster, exhibit high turnover across genders but with gender-specific differences in departure conditions. Women experience both voluntary and involuntary exits at higher rates, particularly among satisfactory performers, hinting at structural instability, job design pressures, or context where performance ratings do not shield women from exit events. Men in production also show substantial turnover, but with a stronger tendency toward involuntary separation linked to lower performance ratings or role fit issues. These distinctions indicate that male turnover in technical environments aligns with market mobility and performance alignment, whereas female turnover in operational contexts reflects structural instability.

Age further stratifies turnover risk. Employees aged 20–29 exhibit almost no exits regardless of gender, department, or performance level, reflecting early-career stability, shorter tenure, or limited external mobility. Turnover increases sharply among employees aged 30–49, particularly in production and IT roles, and is concentrated among satisfactory performers rather than high or low ones. This mid-career exit pattern reflects turnover driven by career plateauing, role fit, and escalating work–life demands rather than performance failure. Production roles experience the highest volatility in this group, with substantial exit volumes across performance tiers, suggesting a misalignment between physical job demands and evolving employee expectations during mid-career stages. In the 50–59 group, exits persist primarily in production and IT, albeit at lower volume, indicating late-career disengagement, reduced physical tolerance, or role-based exit patterns tied to retirement transitions. Across age groups, high performers show consistently

low turnover, regardless of department or gender, highlighting performance-based retention prioritization for organizational continuity and knowledge stability. In contrast, satisfactory performers in mid-career remain the core exit segment, reflecting a persistent attrition risk that is not mitigated through compensation or performance recognition alone.

Marital status also interacts with age and department to differentiate turnover outcomes. Among employees aged 30–49, Production shows substantial voluntary exits among singles and married employees and notable involuntary exits among divorced individuals, reflecting life-stage pressures operating differently across demographic categories. IT/IS shows smaller but meaningful turnover volumes among married and single mid-career professionals, predominantly voluntary, indicating mobility tied to market pull and career expectations. Older cohorts experience exits concentrated in production roles across marital types, reflecting physically demanding labor conditions that are difficult to sustain into late career.

Tenure and gender further nuance these patterns. Turnover is heavily concentrated among employees with under five years of service, especially among those who meet performance expectations. Early-career exits among women are predominantly voluntary and occur among satisfactory performers, whereas men show a mixture of voluntary and performance-triggered exits, indicating different underlying drivers of mobility. With increasing tenure, turnover among both genders slows dramatically; beyond ten years of service, exits are almost non-existent across all performance levels, signaling a stable long-term workforce with high embeddedness and limited movement. Across tenure categories, turnover is disproportionately concentrated among employees who meet expectations rather than top or low performers, reinforcing that exit behaviors cluster among employees whose contributions are adequate but whose progression pathways or role conditions may not evolve in tandem with career needs.

Overall, the data depicts a workforce stratified by gender, marital status, age, tenure, and job type, where turnover is not primarily driven by poor performance or inadequate compensation but by a confluence of structural, demographic, and occupational factors. High performers are largely retained regardless of demographic or job category, mid-tier technical specialists exhibit mobility tied to market forces, and operational workers—particularly women—experience structural churn that reflects job design pressures rather than performance variance. The organization retains its most senior and specialized employees but sustains chronic turnover among mid-career, satisfactory performers in both technical and production roles, reflecting systemic instability driven by occupational structure, demographic context, and lifecycle dynamics rather than individual capability deficits.

3.4 Turnover and Retention

The data reveals that different termination reasons are strongly associated with distinctive compensation patterns, reflecting underlying segmentation in workforce value, job characteristics, and labor market pressures. Employees exiting due to misconduct or performance issues tend to occupy lower salary ranges, suggesting a concentration of early-career or lower-skilled talent in roles with weaker fit and higher behavioral volatility. In contrast, employees exiting for attendance reasons earn moderately, hinting at disengagement in stable, lower-tier jobs where monotony, physical strain, or inconsistent supervisory practices may erode motivation. Departures tied to compensation dissatisfaction cluster around mid-level salary bands, indicating that employees who perceive themselves as underpaid relative to market benchmarks are not necessarily low earners but rather mid-compensation contributors who interpret wage stagnation as misalignment with their skills or experience. A small number of high-salaried exits tied to unusual or abrupt reasons demonstrate that sudden labor-market shocks or disruptive events can affect high-value individuals, representing rare but costly losses. Meanwhile, life-stage exits such as maternity, retirement, relocation, or returning to school occur at moderate salary levels and reflect career-life

transitions more than organizational dynamics. Dissatisfaction-driven exits also cluster around mid-range compensation, reinforcing a pattern where competent, moderately compensated employees experience high turnover risk rooted in perceived stagnation rather than underperformance.

Workforce segmentation by job family reflects two distinct turnover regimes: skilled professional roles with low-frequency but strategically significant exits, and high-volume operational roles characterized by systemic churn. High-skilled technical and managerial employees exhibit occasional exits tied to specific contextual triggers—career change, scheduling conflicts, lifestyle decisions, or selective performance issues—while retaining relatively strong stability overall. By contrast, production technicians show extremely high turnover across nearly every exit category, indicating a structurally volatile labor pool in which employees frequently leave for alternative job prospects, compensation increases, career development, or dissatisfaction with work conditions. Exit frequency is concentrated in common structural reasons rather than idiosyncratic incidents, signaling a workforce segment where turnover is normalized, cyclical, and deeply rooted in labor-market dynamics. The presence of exits driven by extreme or unusual events in professional jobs contrasts with the predictable exit profiles of production workers, highlighting different risk types: low-volume, high-impact exits in skilled roles versus high-volume, predictable churn in operational work. Exit patterns in revenue-generating roles show fewer departures, though turnover reasons remain diverse, reflecting the complexity and volatility inherent in sales roles without necessarily indicating widespread disengagement.

Termination reasons vary notably by age, illustrating how employee motivations and work outcomes evolve across career stages. Employees under 30 show negligible turnover, possibly due to limited representation, high early-career attachment, or constrained external options. Turnover intensifies sharply in the 30–49 age group, with the highest incidence of career mobility, compensation-seeking behaviors, dissatisfaction, career change, and abrupt disengagement, demonstrating that mid-career professionals are most likely to reassess their work context in response to opportunity, meaning, or job conditions. Lifestyle-driven exits increase within this segment, indicating greater life complexity and shifting priorities. In the 40–49 cohort, turnover reasons shift toward relocation, retirement, and planned transitions while retaining traces of dissatisfaction and career change, showing that mid-career workers continue to seek alternatives but often through more structured pathways. Later in the 50–59 range, exit drivers shift toward retirement readiness, opportunity seeking, and disengagement with fewer sudden or disciplinary cases, reflecting a more predictable exit horizon. Among employees 60 and older, turnover is heavily concentrated around retirement and select financial pull factors, indicating sustained labor-market participation among some older workers but with reduced connection to progressive performance or dissatisfaction dynamics.

Tenure further clarifies this lifecycle: turnover is overwhelmingly concentrated within the first five years of employment, especially among production and technical roles, reflecting early-stage mismatch, unmet expectations, or competitive alternatives. The first two years are marked by exploratory exits, dissatisfaction, compensation seeking, and sudden disengagement, while the 2–5 year period displays intensified mobility combined with escalating life-stage pressures. A reduction in performance-triggered exits occurs beyond this point, suggesting stabilization or attrition of mismatched employees. Between five and ten years, turnover becomes more selective and is often concentrated in frontline labor, indicating that even experienced workers in operational environments face ongoing stress or limited progression. Beyond a decade of service, turnover virtually disappears, signaling profound stability among long-tenured staff regardless of role or performance levels. Thus, turnover risk is front-loaded, decreases sharply after mid-tenure, and nearly vanishes after long-term embedding.

Performance level interacts with turnover motivation in distinctive ways. High performers rarely exit, and

when they do, it is most often for external opportunity or life-stage transitions rather than dissatisfaction or performance breakdown, demonstrating a pattern of voluntary movement driven by strong market alternatives. By contrast, the largest exit volumes arise among satisfactory performers, who represent the bulk of the workforce and the majority of voluntary departures. Their exit reasons span compensation, job conditions, career mobility, relocation, dissatisfaction, and school transitions, reflecting a broad and diffuse risk profile in a segment that meets expectations but does not gain upward momentum or strong attachment. Performance-problem groups are numerically small but produce concentrated behavioral exits tied to attendance issues, discipline, and poor fit. Across performance categories, dissatisfaction is a recurring but not dominant driver, suggesting that baseline engagement challenges cut across capability levels, though turnover outcomes diverge sharply by performance tier.

Departmental variation highlights structural, cultural, and labor-market dynamics. Production experiences the largest workforce size and the broadest distribution of exit reasons, with notable concentrations in compensation-seeking, career mobility, dissatisfaction, and lifestyle demands, revealing a high-volume labor environment shaped by alternative opportunity structures and job conditions. IT/IS experiences lower turnover volume but displays a mix of opportunity-driven and performance-based exits, reflecting its position at the intersection of technical complexity and competitive labor markets. Administrative and executive roles show minimal exits, reflecting either structural stability, tenure concentration, or low external mobility. Sales and software roles show sparse but varied exit reasons, not indicative of systemic turnover risk but reflective of role volatility.

Manager-level data underscores the localized nature of turnover dynamics. Some managers oversee environments producing high volumes of opportunity-driven exits, indicating teams composed of mobile, transitional, or stressed personnel; others experience high concentrations of behavioral and disciplinary exits, hinting at cultural strain, misalignment, or breakdowns in supervisory structure. Certain leaders have turnover portfolios dominated by relocation, retirement, or health, reflecting demographic characteristics of their teams. Others show small but regular patterns of dissatisfaction or opportunity-seeking, indicating subtle, ongoing motivational drift. Leader-level diversity in exit patterns confirms that turnover is not a monolithic organizational phenomenon but a distributed, context-specific outcome influenced by role design, team composition, managerial climate, and employee demographic profile.

Taken together, the data depicts a workforce ecosystem where turnover is shaped by compensation structure, job type, demographic positioning, performance fit, tenure, and managerial environment. Low-skilled operational roles sustain chronic turnover rooted in structural and labor-market conditions; mid-skilled technical roles experience selective but costly exits tied to external market demand; and long-tenured employees exhibit strong embeddedness with negligible separation. Turnover motivations reflect a blend of economic, behavioral, and life-stage influences, with key transition points occurring in mid-career and early tenure. The organization retains most high performers and long-tenured employees but experiences persistent separation among satisfactory performers in mid-skill, mid-compensation roles and structurally volatile operational labor, demonstrating a complex and segmented retention landscape driven by interlocking workforce characteristics.

3.5 Performance and Workforce Compensation

The matrix reveals a concentrated pattern of turnover in mid-career, operational roles while high-skill technical and leadership positions exhibit near-universal retention, regardless of performance ratings. Employees aged 30–49 in production-oriented positions, including Production Technicians, Production Managers, and Area Sales Managers, show the highest incidence of separation, frequently among individuals who fully meet or exceed expectations, suggesting that exits are driven by structural or economic

factors rather than performance deficits. These patterns imply that turnover in this segment reflects job conditions, labor-market substitutability, or cost dynamics, rather than corrective performance management. By contrast, highly skilled and knowledge-intensive positions such as business intelligence, data architecture, software engineering, and executive leadership demonstrate almost complete stability across age and performance categories, underscoring the organization's prioritization of continuity in roles with high strategic and intellectual value. Even employees placed on formal performance remediation tracks in technical or leadership roles show negligible termination, indicating that low performance in scarce talent categories does not lead to exit outcomes in the same way it does in operational roles. Turnover among low performers overall is minimal, while satisfactory mid-performers in operational roles disproportionately experience separation, reflecting performance-management dynamics that differ by workforce segment. Additionally, the complete absence of turnover among employees aged 20–29, despite representation in senior and technical roles, may reflect very small cohort size, delayed performance assessment, or limited early-career mobility within this context. Together, these patterns illustrate a differentiated employment ecosystem in which high-value talent is retained regardless of performance variability, while operational labor experiences concentrated and performance-insensitive turnover, particularly during mid-career.

3.6 Performance and Workforce Composition

The data shows a pronounced tenure-based performance and retention lifecycle, in which turnover is virtually absent in early tenure but accelerates sharply during the mid-career phase, particularly within operational and technical roles. During the first two years of tenure, employees across departments overwhelmingly meet performance expectations and show almost no separation, indicating a hiring pipeline that produces fit-for-role employees or a probationary environment where underperformance does not persist long enough to produce formal terminations. As tenure progresses into the two-to-five-year band, performance remains generally strong, especially in Production and IT/IS, yet indicators of performance strain begin to appear in labor-intensive roles, reflected in the emergence of "Needs Improvement" and PIP cases. This early deterioration in performance is not widespread but is concentrated in jobs that combine physical demands, high throughput, or limited autonomy, suggesting that risk factors accumulate quickly in certain work environments.

The most pronounced performance bifurcation occurs in the five-to-ten-year tenure range, where employees in Production and IT/IS present a wide mix of satisfactory performance, emerging performance gaps, and elevated termination counts. This period represents a critical inflection point in which long-tenured employees either consolidate competence and remain or exit due to stagnation, skill mismatch, job strain, or reassessment of career alignment. While performance remains relatively high overall, the coexistence of satisfactory output, declining performance, and elevated turnover within the same tenure band suggests a sorting mechanism in which only a subset of workers successfully transition into embedded long-term contributors. Beyond the 10-year mark, performance stabilizes substantially across Production, IT/IS, and Sales, with large numbers of individuals meeting expectations and almost no terminations, demonstrating that employees who remain past the mid-career volatility window constitute a highly stable and experienced core. The small cohort with fifteen or more years of tenure shows negligible performance variability and turnover, reflecting a survivor effect in which only highly aligned individuals persist to late career stages.

Age-related patterns intersect with tenure to produce a distinct lifecycle of workforce stability and mobility. Turnover in early tenure is heavily concentrated among mid-career employees aged 30–49, not among early-career hires, indicating that departures during the first five years are tied less to youth-driven churn and more to experienced workers assessing job fit, workload, compensation, or long-term viability. Younger employees show exceptionally low exit rates, regardless of tenure, which may reflect small cohort size, early-career attachment, or limited external opportunities. Production roles show consistent early attrition

across age groups, signaling that role characteristics rather than age drive separation dynamics. In contrast, turnover in IT/IS is concentrated among mid-career workers, pointing to external market forces, occupational mobility, or misalignment between capability and organizational structures. After approximately ten years of tenure, turnover diminishes dramatically across all age groups and departments, suggesting high levels of embeddedness, organizational loyalty, or structural barriers to exit.

Job-level patterns further clarify this trajectory. Turnover risk is heavily concentrated in mid-career technical and production roles—particularly Production Technician I/II, Production Manager, and various technical support roles in IT/engineering—and persists across tenure bands until approximately the ten-to-fifteen-year mark, after which exits nearly disappear. Employees aged 30–49 in these roles exhibit the greatest separation levels, especially within early and mid-tenure windows, while younger hires and older workers rarely exit regardless of tenure. These exits occur in roles characterized by high throughput and high skill demand, indicating that critical levels of human capital are being lost during peak productivity years. By contrast, high-skill knowledge roles such as BI developers, data architects, network engineers, and senior technical leadership positions demonstrate near-total stability across tenure and age, reflecting strong retention of individuals with specialized expertise and institutional decision-making power.

Across the dataset, the organization exhibits a pattern in which early tenure is stable, turnover spikes during mid-career in operational and technical functions, and then nearly vanishes in later tenure. This produces a core workforce composed of long-tenured employees whose performance remains satisfactory with minimal variation, while turnover risk is concentrated in employees who are experienced but not yet embedded. As a result, the employment system generates a durable long-term labor base but experiences recurring attrition among mid-career talent in roles that combine operational demands, skill intensity, or market portability.

3.7 Job roles and career progression

The table reveals a pronounced stratification of turnover risk and compensation across role categories and tenure, indicating that the organization maintains two distinct workforce ecosystems: a high-churn, lower-wage operational labor pool and a low-churn, high-wage technical and leadership core. In the first two years of tenure, turnover is heavily concentrated in Production Technician roles and select mid-level technical positions, with salaries on the lower end of the organizational spectrum. This pattern signals an early sorting mechanism in operational environments where mismatches or work sustainability issues are resolved quickly. However, when exits occur among early-tenure technical employees—such as Data Analysts, Database Administrators, and Network Engineers—they are associated with substantially higher salaries, illustrating that early separation in knowledge-intensive roles represents costly talent attrition, likely driven by external market opportunities rather than performance deficits.

The 2–5 year tenure window intensifies this divergence: operational roles continue to experience high-frequency exits at low-to-mid compensation levels, while departures of highly paid technical and managerial incumbents emerge at the upper end of the salary distribution. These exits occur during a phase in which employees have accumulated domain knowledge, functional expertise, and organizational familiarity, indicating that turnover at this point represents the loss of employees at a stage where their economic value to the organization has peaked. Across both early-tenure periods, turnover in technical roles is numerically smaller but disproportionately associated with high compensation, making it financially consequential despite modest volume.

Beyond five years of tenure, turnover nearly disappears, and roles occupying the top of the compensation hierarchy—CIO, IT Directors, Architects, Senior Engineers, and specialized managers—exhibit stable retention across all tenure intervals. This reflects an entrenched segment of high-wage employees whose

tenure correlates with durability and career anchoring. These long-tenured individuals appear to form a stable, high-value organizational core in which separation events are rare regardless of salary level or role category. The contrast with early-tenure segments reveals a structural bifurcation in retention dynamics: operational employees cycle rapidly through the organization, often before reaching mid-career, while high-skill talent stabilizes after surviving an early attrition window.

Unlike the operational pipeline, where exits are frequent and inexpensive, attrition early in tenure among technical roles is rare but highly costly, as it erodes roles that combine specialized skill, accumulated experience, and strategic knowledge. The pattern therefore depicts an organization that simultaneously operates a disposable early-tenure labor pool and a long-tenure, high-wage knowledge elite, where employment continuity is high once incumbents pass through an early risk period.

3.8 Performance and Compensation Alignment

The table shows a strong interaction between tenure, performance level, and salary dynamics within the termination population, illustrating that compensation volatility is concentrated early in the employment lifecycle, while high performance and compensation stabilize over longer tenure. In the first two tenure ranges (0–2 and 2–5 years), terminated employees are predominantly rated “Fully Meets,” rather than “Needs Improvement,” and earn median salaries in the \$60–70K range, with compensation distributions extending well above \$100K. This pattern suggests that exits in early tenure are not primarily the consequence of low performance but reflect mobility among employees who meet expectations and operate in roles where market opportunity, job fit, or resource allocation shifts contribute to separation. By contrast, terminations involving “Needs Improvement” or PIP-rated employees are rare but comparatively costly, with compensation levels that cluster near or above median pay bands. The infrequency of these exits, coupled with salary levels, indicates that underperformance does not routinely trigger termination at early tenure stages, and when it does occur, it tends to involve employees with embedded costs.

In the 5–10 year tenure band, termination remains concentrated among employees with “Fully Meets” ratings, but median salary levels rise into the mid-\$70K range, and salary spreads widen between retained and terminated incumbents. The divergence in compensation profiles suggests that exit events among experienced, satisfactory performers reflect shifts in career trajectory, role progression, or external labor-market alignment rather than performance failure. In later tenure bands (10–15 and 15–20 years), termination becomes exceedingly rare, and when it occurs, it is predominantly associated with individuals rated “Exceeds,” who occupy the upper end of compensation ranges, with maximum salaries reaching from the high \$100Ks into the low \$200Ks. These cases underscore a long-term pattern in which high-tenure, high-performing employees are compensated at elevated levels and are not typically subject to separation, reflecting an equilibrium where tenure and performance coalesce into workforce continuity. The combination of near-zero termination counts and extremely high compensation in these later tenure groups highlights the consolidation of organizational investment around long-tenured, high-value talent and the persistence of these individuals within the workforce once tenure thresholds are crossed.

3.9 Manager Level Attrition

The data reveals substantial variation in turnover dynamics across managers, shaped by the interplay of gender, marital status, department, and exit type, demonstrating that attrition is not evenly distributed but clustered within specific leadership environments. Some managers, such as Brian Champagne, Peter Monroe, and Lynn Daneault, display balanced retention across genders and marital categories, with minimal turnover events, suggesting stable team climates and consistent employment continuity irrespective of demographic composition. In contrast, several leaders—particularly within Production, including Amy Dunn, Brannon Miller, David Stanley, Ketsia Liebig, Kelley Spirea, Kissy Sullivan, Michael Albert, and

Webster Butler—oversee work environments characterized by high volumes of voluntary exits relative to active headcount. In these cases, female employees often appear in higher numbers among resignations, while male employees are also present in substantial volumes, indicating turnover dynamics driven not by specific demographic groups alone but by broader structural features of the work environment. Termination-for-cause events are comparatively rare and clustered among a smaller group of managers—namely Alex Sweetwater, Brandon LeBlanc, Elijah Gray, Janet King, John Smith, Kelley Spirea, and Simon Roup—with gender variation depending on manager context. Under some leaders, female employees represent a larger share of disciplinary exits, while under others, male employees predominate, reflecting divergent behavior profiles or performance management norms across teams.

Marital status interacts with leadership context and department to shape workforce mobility patterns. Managers with high-churn Production environments show significant voluntary exits among both married and single employees, with singles appearing especially prominent in many cases, signaling the presence of younger, more mobile worker populations in physically demanding or transitional roles. Married employees, in contrast, often show both higher retention and higher termination counts depending on manager, reflecting a workforce more likely to persist in roles but also prone to exit under conditions of sustained workload pressure or constrained flexibility. Widowed, separated, and divorced employees appear in smaller numbers across managers but show consistent representation in termination outcomes, particularly within Production, suggesting heightened attrition risk among employees navigating major life changes.

Across departments, distinct patterns emerge. Production exhibits the most volatile turnover environment, with high volumes of voluntary exits across managers and demographic categories, indicating persistent mobility among frontline employees who meet performance expectations but depart before advancing. IT/IS exhibits stronger long-term stability, particularly under managers like Champaigne and Monroe, with a concentration of married employees retained over time and sporadic clusters of terminations under specific leaders. In some IT/IS units, isolated pockets of disciplinary turnover coexist with voluntary exits, suggesting localized performance pressures, hiring mismatches, or team-level cultural variability. Sales and Software Engineering show lower overall termination frequencies, but turnover events are clustered within managers and disproportionately voluntary, reflecting competitive labor-market dynamics among skilled professionals rather than systemic disengagement.

A recurring pattern across managers is the coexistence of high voluntary turnover with occasional disciplinary exits within the same teams, indicating environments where employees both choose to leave and are occasionally managed out, reflecting dynamic workforce churn rather than uniform stability or uniform enforcement. At the opposite end of the spectrum, several managers maintain large, stable employee bases with almost no exits of any type, irrespective of employee gender or family context, suggesting enduring employment continuity within those units.

Taken together, these patterns depict an organization characterized by highly uneven turnover regimes concentrated in particular managerial environments, especially within Production, where structural job features intersect with demographic mobility characteristics to produce persistent churn. Meanwhile, managerial contexts in technical and administrative areas show greater retention stability, interrupted in some cases by discrete episodes of disciplinary turnover or market-driven mobility. Overall, turnover patterns across managers reveal that retention outcomes are heavily shaped by localized leadership contexts and demographic composition, with varying patterns of stability, mobility, and disciplinary exit emerging as distinctive features of different teams.

3.10 Recruitment Source

The data reveals that recruitment sources differ markedly in their ability to generate high-performing, stable talent, with clear distinctions in performance distribution, tenure outcomes, demographic profiles, and termination risk. Employee Referral and LinkedIn stand out as the strongest and most reliable pipelines, consistently supplying large volumes of “Fully Meets” and “Exceeds” performers across technical, managerial, and operational roles, with minimal termination events across genders, marital groups, and age cohorts. These sources are also disproportionately associated with long-tenured employees (10–15 years), reinforcing a pattern of embeddedness, job fit, and sustained performance regardless of demographic background.

Indeed emerges as another high-value source, producing a large, stable workforce in Production and IT/IS with high volumes of employees who fully meet expectations and remain employed over time, although it also introduces modest performance dispersion in operational roles. In contrast, mass-market channels such as Google Search and CareerBuilder generate high hiring throughput—especially into frontline operational roles—but are associated with shorter tenure, elevated voluntary exits, and higher representation of lower-performing employees during early tenure. These patterns point to a talent pool with weaker organizational attachment, more heterogeneous skill alignment, and greater mobility, particularly among mid-career candidates.

Diversity Job Fair and CareerBuilder produce smaller cohorts characterized by mixed performance and tenure profiles, with pockets of “Fully Meets” alongside notable “Needs Improvement” and PIP representation, reflecting variation in candidate readiness, job match, or career stage. Despite modest volumes, these pipelines contribute disproportionately to early-career and mid-tenure attrition. Website sourcing, while low volume, displays a narrower and more stable distribution of high-performing incumbents, often in sales and administrative leadership roles, indicating targeted self-selection driven by organizational visibility rather than external sourcing.

Operational roles, especially Production Technician I and II, dominate hiring volume for nearly every source and represent the highest risk area for turnover, regardless of channel. Across sources, these roles show recurrent patterns of early voluntary departure among employees who meet performance standards, suggesting a disconnect between job demands and long-term retention rather than widespread performance deficiencies. Google Search, in particular, shows a dual profile: it supplies large numbers of fully meeting performers while simultaneously contributing disproportionate counts of voluntary exits at early and mid-tenure stages, highlighting a workforce segment that performs adequately but leaves readily.

Demographically, recruitment sources also funnel distinct gender, age, and marital groups into the organization. LinkedIn and referrals produce gender-balanced pipelines with strong performance outcomes, while mass-market channels show uneven gender distributions, including higher female representation in volatile operational roles. Single employees are more concentrated in high-churn sources such as Google Search and CareerBuilder, whereas married and mid-career professionals are more prevalent in stable pipelines like LinkedIn, Indeed, and referrals. Age patterns reinforce this divide: early-career turnover is concentrated among hires from mass-market digital channels, while mid-career and later-career hires sourced through referrals and LinkedIn show long tenure and low attrition.

Performance and tenure outcomes further reveal predictable lifecycle dynamics across sources. High-skill, leadership, and technical roles sourced through referrals and Indeed exhibit almost no early-tenure termination and remain active across long time horizons, while lower-skill operational roles sourced via high-volume channels display both early job match challenges and performance volatility. In many cases, “Fully Meets” performers sourced through Google Search and job boards still exit voluntarily at elevated

rates, indicating that acceptable performance does not guarantee persistence when sourced from externally visible, transactional pipelines.

Finally, termination type is strongly linked to recruitment sources. Voluntary exits dominate across nearly all channels, especially among hires from Google Search, Indeed, and Diversity Job Fair, reflecting mobility rather than performance failure. Involuntary terminations are rare and clustered in early tenure among hires from CareerBuilder, Google Search, and Indeed, while almost absent in referral- and LinkedIn-based cohorts. This pattern underscores a divergence between channels that source employees who perform and remain versus channels that source employees who perform but depart, regardless of organizational investment.

Overall, the recruitment ecosystem shows a clear bifurcation between high-value, network-driven channels that generate long-tenured, high-performing, low-risk employees across diverse demographics, and high-volume, transaction-driven channels that provide operational capacity but contribute disproportionately to early and mid-tenure exits among acceptable performers. These patterns shape workforce stability, performance predictability, and staffing continuity across departments, with especially strong implications for labor-intensive operational environments where hiring volume is highest and retention risk is most concentrated.

3.11 Employee Satisfaction

The data shows a strong, consistent association between employee satisfaction and performance outcomes, where higher satisfaction levels coincide with higher proportions of employees rated “Fully Meets” or “Exceeds,” while low satisfaction clusters around “Needs Improvement” and PIP categories. Production illustrates this duality most clearly: it contains large volumes of high-performing, satisfied employees, yet simultaneously houses concentrated pockets of low satisfaction linked to underperformance and elevated risk, suggesting polarized experiences within the same operational system. IT/IS reveals a more linear relationship between morale and performance, as moderate to high satisfaction almost universally aligns with strong outcomes and minimal performance remediation, while Sales exhibits sensitivity to satisfaction variance despite smaller volume, with noticeable pockets of performance management activity appearing even at mid-range satisfaction. In general, the data suggests that dissatisfaction is closely intertwined with performance risk, while satisfaction tends to stabilize and enhance performance outcomes across departments.

Satisfaction patterns intersect with retention and tenure in complex ways, where dissatisfaction accelerates early exits, particularly within the first five years of employment, while long-tenured employees rarely exit, even when satisfaction is low. Early-tenure employees with low satisfaction show high rates of voluntary termination, reflecting rapid movement away from perceived misalignment, whereas older, long-tenured employees appear embedded and remain employed regardless of sentiment. At moderate satisfaction levels, the workforce is primarily composed of mid-to-long-tenured employees with stable retention, but early-tenure churn remains visible, implying that moderate satisfaction sustains performance but not necessarily attachment among newer hires. At high satisfaction levels, early-tenure voluntary exits persist despite strong performance, indicating that departures are motivated more by external opportunities than disengagement. Meanwhile, terminations for cause are rare and concentrated among early and mid-tenure groups, reinforcing that involuntary exits are a lower frequency mechanism and are not strongly tied to long-term dissatisfaction.

Gender dynamics add further nuance. At low satisfaction levels, both men and women appear in PIP and Needs Improvement categories, though women are more often seen in PIP while men show a mix of

low-performance designations, indicating broad vulnerability when dissatisfaction is present. With rising satisfaction, both genders exhibit strong performance improvement, though women are more likely to produce “Fully Meets,” whereas men have slightly higher representation in “Exceeds,” reflecting potential differences in performance trajectory, recognition patterns, or role assignments. Even at high satisfaction levels, small pockets of lower performance persist, particularly among men, suggesting that supportive environments do not entirely eliminate performance variability.

Satisfaction intersects with tenure and age to create a structured stability model. High satisfaction is closely associated with longer tenure, particularly among employees aged 30–49, forming the core of the organization’s stable, long-term workforce. Low satisfaction is most visible among early-tenure employees and disproportionately connected to exit behavior rather than ongoing retention. Employees aged 50+ show relatively high satisfaction and low exit rates despite smaller representation, indicating a resilient, stable late-career segment that remains largely unaffected by dissatisfaction-driven mobility. The 30–49 cohort emerges as the most central to organizational continuity, with high satisfaction and long tenure reinforcing each other, while new entrants and mid-tenure employees represent the primary turnover risk zone.

Compensation patterns reflect structural differences in role type and performance regardless of satisfaction. Highly skilled technical and leadership positions consistently command high salaries across satisfaction levels, indicating compensation is primarily anchored to role value and expertise. Operational roles show greater compensation variability and clearer separation between terminated and retained employees, where lower-paid incumbents are more likely to exit and higher-paid performers persist. Among high satisfaction groups, salary dispersion widens significantly, especially where top performers occupy leadership or specialized roles, while low satisfaction corresponds with constrained earnings and narrower ranges. Terminated employees at higher satisfaction levels earn less than retained peers in the same categories, suggesting that departures at these levels involve individuals who had moderate earning potential within higher-paying roles, rather than those occupying the top of compensation hierarchies.

Recruitment sources contribute to the satisfaction, performance, and retention landscape by shaping workforce composition and stability profiles. Referral, LinkedIn, and Indeed generate the bulk of long-tenured, satisfied employees with strong performance outcomes and low termination presence, particularly in Production and IT/IS. These sources appear to deliver experienced, career-stable workers who integrate deeply over time. In contrast, Google Search, CareerBuilder, and Diversity Job Fair supply early-tenure employees with more variable satisfaction and performance outcomes, alongside higher rates of voluntary exits and performance-based separations, particularly within operational roles. Termination activity is concentrated in these channels within early tenure groups, indicating patterns of exploratory mobility or misalignment. Employee Referral stands out for delivering highly satisfied, long-tenured employees with virtually no exit events regardless of satisfaction level, indicating strong alignment between pre-hire networks and sustained fit. Across all channels, early-tenure employees display higher termination risk regardless of satisfaction, while long-tenured employees sourced from LinkedIn, Indeed, and referrals demonstrate consistent stability across satisfaction levels.

Departmental differences reinforce these structural themes. Production dominates headcount and shows strong satisfaction among most employees, resulting in a large, stable segment concentrated in 10–15 years of tenure, but also registers isolated spikes in dissatisfaction, performance issues, and mid-tenure turnover, particularly between 5–10 years. IT/IS exhibits smaller headcount but cleaner alignment between satisfaction, performance, and retention, with minimal terminations and strong representation of long-tenured, satisfied incumbents. Sales displays smaller but more fluid patterns shaped by performance sensitivity, satisfaction volatility, and sporadic exit events across sparse populations. These departmental

differences illustrate that retention and satisfaction dynamics are both functionally and structurally embedded within occupational context.

Satisfaction interacts with compensation and termination risk in revealing ways. Employees with high satisfaction show upward salary mobility and wider dispersion, reflecting progression into more complex or valued roles, while those with moderate to low satisfaction show restricted salary growth and increased termination exposure. Even within high satisfaction groups, terminations occur primarily among employees with lower compensation relative to retained peers, showing that high satisfaction does not universally shield employees from exit, but the economic stakes of exiting differ by position. The highest compensation bands align with the highest satisfaction levels, concentrated among leadership and specialized technical talent that remain retained almost universally.

Finally, demographic patterns illustrate that age and marital status interact with satisfaction to influence retention outcomes, but satisfaction exerts a stronger moderating role than personal demographics alone. Married and single employees aged 30–49 represent the most satisfied and retained segment, whereas single employees aged 50–59 show elevated exit behavior at moderate satisfaction, hinting at shifting engagement patterns later in career trajectories. Divorced and widowed employees are few in number but appear to experience stable retention when satisfaction is high, regardless of age.

Across all domains, the clearest consistent pattern is that satisfaction amplifies performance, tenure reinforces retention, and turnover is driven less by poor performance and more by life-stage mobility, structural role conditions, and external opportunity dynamics, particularly among newer employees who perform adequately yet exit early.

3.12 Engagement Levels

The dataset reveals a clear, tiered relationship between employee engagement, performance outcomes, satisfaction levels, and turnover risk. High-engagement employees overwhelmingly populate the strongest performance categories—primarily "Fully Meets" and "Exceeds"—and report moderate-to-high satisfaction, suggesting that engagement functions as an enabling mechanism for both capability and positive sentiment. However, high engagement does not guarantee retention: a substantial number of exits occur among high-satisfaction, high-performing employees, indicating turnover driven by opportunity pull rather than push factors. This pattern is particularly evident in high-engagement groups where high performers exit at satisfaction levels 3–5 in meaningful volume, often associated with external mobility, compensation opportunities, or career progression, rather than dissatisfaction. In contrast, low-engagement employees cluster around "Needs Improvement" and PIP ratings, exhibit lower satisfaction dispersion, and have disproportionately high termination rates, regardless of satisfaction scores. Engagement, therefore, appears more predictive of turnover than satisfaction, with disengagement underpinning both performance deterioration and higher exit likelihood.

Marital status moderates these dynamics in nuanced ways. High engagement produces strong performance and high satisfaction across all marital categories, but married and divorced employees show elevated counts of voluntary turnover even at high satisfaction levels, suggesting that life-stage stability does not suppress mobility among highly engaged workers. Singles are heavily represented in high engagement with lower exit volume, implying stronger attachment or fewer constraints that pressure departure. The moderate engagement segment displays greater volatility, particularly among divorced employees with satisfaction levels 4–5, who show disproportionately high turnover, suggesting midlife re-evaluation or greater professional autonomy. Low and very low engagement show turnover across all marital groups regardless of satisfaction, confirming that disengagement weakens the protective effects of both sentiment and life-stage

stability.

Gender dynamics illustrate distinct behavioral and performance responses to engagement variability. Within high engagement, both genders achieve strong performance, though women are slightly more represented in "Fully Meets," while men show a marginal skew toward "Exceeds," indicating possible differences in recognition, task allocation, or self-selection into high-visibility work. Moderate engagement produces more performance volatility among women, who appear in both high-performance and low-performance categories, while men display more consistency but higher exit counts at moderate satisfaction, suggesting different motivational drivers: men exit earlier when conditions are suboptimal, while women persist longer but may experience sharper performance decline under disengagement. Very low engagement, though small, is predominantly male and concentrated in low performance and termination, reflecting abrupt disengagement trajectories among men in extreme cases.

Departmental patterns reveal that engagement amplifies existing structural dynamics. Production dominates high engagement numerically, with large cohorts of high satisfaction and strong performance, but also displays substantial exit volumes among competent workers, indicating restless mobility even within engaged populations. IT/IS mirrors high engagement with strong performance outcomes but shows smaller, more strategic exit clusters among fully meeting performers, suggesting competitive labor market dynamics for technical skills. Sales and Software Engineering exhibit smaller high-engagement populations but display turnover concentrated among moderately satisfied performers, implying a thinner talent pipeline with selective risk. Low engagement is strongly concentrated in Production, tied to low performance and exit events, reflecting operational vulnerability influenced by workload, role structure, or supervisory inconsistency.

Tenure interacts closely with engagement to structure risk. Long-tenured employees (10–15 years) dominate high engagement, high performance, and retention, forming the organization's stable talent base with minimal termination volatility. Employees with 5–10 years of tenure present a transitional risk: strong performance persists, but exit patterns increase, indicating a pivot point where engagement interacts with career plateau or external incentives. Early-tenure employees (0–2 years), even with high engagement and high satisfaction, exhibit disproportionately high exit rates—suggesting that engagement is not protective in initial career stages, and that exiting workers display strong capability rather than dissatisfaction. Low and very low engagement clusters predominantly in mid-tenure segments (2–10 years), where disengagement coexists with accumulated experience but not enough embeddedness to maintain tenure, resulting in termination or voluntary separation.

Role-level dynamics show that high engagement is most prevalent among technical, leadership, and specialized roles, where satisfaction remains high and exits low, but early-exit events still emerge among well-compensated talent, especially in IT, data, and engineering positions. Production roles display large high-engagement populations but simultaneously host clusters of dissatisfaction and elevated exits among strong performers, indicating structural instability in frontline labor even when engagement is high. Low engagement is sparsely distributed but heavily concentrated in operational and customer-facing roles, where performance risks and exit tendencies converge, while professional roles rarely show low or very low engagement, reinforcing the buffering effects of autonomy, skill mastery, and role complexity.

Compensation stratifies strongly by engagement level. High-engagement employees earn consistently competitive salaries with broad dispersion at high satisfaction and strong performance levels, supporting a link between engagement, capability, and economic value. Terminations among high-engagement employees occur at moderate salary bands, concentrated in mid-to-high skill roles rather than among top earners,

suggesting mobility patterns rather than compensation-driven churn. Low-engagement employees sometimes occupy high compensation bands, particularly among longer-tenured incumbents, introducing compensation inefficiency where disengaged employees are expensive but less productive, while terminated low-engagement employees earn materially less, reflecting performance-linked exits. Moderate engagement shows clear divergence: retained employees earn materially more than terminated peers, suggesting salary stratification aligned with performance durability and engagement stability.

Age dynamics indicate that engagement is highest among early- and mid-career cohorts (30–49), who dominate high satisfaction and long tenure, while older employees (50–59) show more dissatisfaction and exit activity under moderate engagement, suggesting complex interactions between career maturity, work identity, and evolving expectations. Younger employees (20–29) are underrepresented across engagement segments, possibly reflecting recruitment pipelines, limited early tenure, or retention challenges, while workers 60+ appear in both high and low satisfaction categories, indicating divergent late-career experiences—some embedded, others misaligned or exit-o—though in small numbers.

Across the dataset, high engagement correlates with high capability, high satisfaction, and strong retention, but paradoxically also with ambitious voluntary exits concentrated among high performers. Low engagement corresponds to underperformance, higher termination risk, and occasionally expensive talent misalignment, while moderate engagement represents a latent risk zone susceptible to performance drift and mobility. Recruitment source patterns amplify these dynamics, with online job portals yielding high satisfaction and engagement but also higher exit rates among high performers, whereas referrals produce fewer hires but more durable embeddedness.

Overall, engagement functions as the central organizing variable shaping performance, satisfaction, turnover, compensation, and workforce stratification. High engagement builds talent quality and sentiment but does not prevent opportunity-driven exits, moderate engagement produces ambivalence and turnover vulnerability, and low engagement generates costly performance decline and separation risk.

3.13 Review Cycle Length

The data reveals a starkly segmented tenure lifecycle in which mid-tenure employees experience stability, strong performance, and low turnover, while long-tenured employees face near-universal separation regardless of performance quality, department, or satisfaction. Employees in the 5–8 year review delay window represent a highly productive and stable workforce cluster: most are high performers, either fully meeting or exceeding expectations, and the overwhelming majority remain employed across Production, IT/IS, and Sales. Even lower performers, such as Needs Improvement or PIP cases, are largely retained, suggesting that during this tenure phase the organization sustains a performance spectrum rather than purging weak contributors. This dynamic implies that mid-tenure functions as a period of performance consolidation, where capable employees embed into organizational structures, build tenure, and accumulate specialized experience. Performance outcomes at this stage are distributed across a wide array of roles, including senior leadership, technical specialties, and frontline operational roles, reflecting a workforce that is both diverse and mature.

This mid-tenure stability abruptly collapses beyond eight years of review delay. In the 8+ year group, separation becomes nearly universal, and this occurs regardless of whether employees are high performers, highly satisfied, or strongly engaged. Strikingly, high performers are especially concentrated in the terminated group, indicating that performance quality provides no protective buffer for long-tenured staff. Operational roles are disproportionately affected: Production and IT/IS contribute the most long-tenure exits, and even strong performers in these functions do not appear in the retained population. Many of these

terminated employees hold satisfaction ratings of 3–5, suggesting that their exits are not correlated with disengagement, dissatisfaction, or performance failure. Instead, turnover at this tenure level reflects a systemic and non-behavioral mechanism that affects experienced staff indiscriminately, resulting in the loss of employees at the height of their tenure value. Notably, experienced incumbents with satisfaction ratings of 1 or 2 are absent from this group, implying that low-satisfaction employees exit earlier, while high-satisfaction employees persist long enough to be affected by late-tenure exit trends, revealing a tenure-based rather than sentiment-based filtering pattern.

Performance distributions also reflect this tenure bifurcation. During the 5–8 year window, the organization retains essentially all high performers and most moderately performing contributors, suggesting a period during which performance signals are stable and aligned with retention. By contrast, long-tenure attrition is dominated by high performers, not low performers, with large volumes of Fully Meets and Exceeds employees exiting, and relatively few underperformers present. This indicates that poor performers do not survive into late tenure, while strong performers do—only to exit later en masse. Consequently, the organization is losing its most capable workers precisely at the point when accumulated knowledge, relational capital, and long-term experience are maximized.

Managerial patterns reinforce this tenure-linked shift. In mid-tenure, managers exhibit distinctly different satisfaction and performance cultures, reflected in varying distributions of strong performers, dissatisfied staff, and termination counts across their teams. Some managers oversee large teams with high satisfaction and virtually no turnover, while others manage smaller or more turbulent teams where dissatisfaction and termination co-occur. This managerial differentiation suggests that leadership style, team climate, and workload structures actively shape employee experience during the mid-career phase. However, managerial influence disappears in the 8+ year group. Regardless of prior performance, satisfaction, or engagement outcomes, employees across nearly all managers exit during late tenure, including under leaders associated with high satisfaction and high performance during earlier periods. This indicates that turnover in late tenure is externally determined rather than locally driven, with managers unable to retain senior members of their teams.

Departmental patterns exhibit a similar inflection. Production dominates the mid-tenure workforce, especially in the 10–15 year window, suggesting a deep reservoir of experienced frontline talent with high performance and strong satisfaction. Yet Production also demonstrates early warning signs during mid-tenure, specifically within the 5–10 year range, where termination rises relative to other tenure bands, signaling an early stage of performance stress or career plateau. However, the largest disruption occurs in the 8+ year group, where Production again dominates—but exclusively in terminated categories, including a large number of high performers. IT/IS mirrors this pattern on a smaller scale, with stable performance and satisfaction in mid-tenure and widespread exits beyond the eight-year threshold, except that IT/IS has fewer long-tenure employees overall, possibly owing to earlier voluntary mobility. Sales shows a similar two-stage pattern but with lower overall volume.

Tenure-based separation outcomes also interact with employee sentiment. In the mid-tenure period, high satisfaction is closely associated with retention, particularly among high engagement employees, while mid-satisfaction individuals show modestly higher exit rates. Low satisfaction appears infrequently among mid-tenure staff, and its presence corresponds with small but observable exits, suggesting dissatisfaction is acted upon early rather than allowed to accumulate long term. The late-tenure cohort reverses this pattern entirely: high satisfaction becomes the dominant sentiment among employees who exit, while dissatisfaction is almost absent. This indicates that long-tenure exits are not affective responses to negative experience but structural outcomes affecting employees who otherwise report positive workplace sentiment.

Exit reasons show a similar transition. Mid-tenure turnover is sparse, fragmented, and dominated by isolated voluntary reasons such as another position, more money, no-call/no-show, or personal circumstances. Late-tenure turnover is voluminous, heterogeneous, and dominated by avoidable drivers: dissatisfaction, desire for higher pay, burnout, role misalignment, and career change. Compensation-related reasons (more money) and unhappiness rank highly, alongside hours and attendance issues, all of which suggest accumulating pressure or unmet expectations during long tenure. Retirement and relocation appear, but their significance is marginal relative to avoidable exit causes.

Taken together, these patterns paint a workforce lifecycle defined by stability and positive performance during mid-tenure, followed by a steep decline in retention and experience density beyond eight years, characterized by the exit of highly capable, highly satisfied employees. Mid-tenure appears to be a period of optimization, development, and capability consolidation, whereas long tenure represents a period of systematic talent loss. The organization retains high performers early, supports performance variability during mid-career, and loses its strongest contributors later, often under conditions of unaddressed dissatisfaction, stagnation, burnout, or compensation misalignment. The resulting workforce structure is bifurcated: deep operational expertise within mid-career incumbents and limited presence of long-tenured experts, with early-tenure employees re-entering the review pipeline at later intervals but not persisting into deep tenure bands.

The dataset therefore reflects a distinctive pattern of **mid-career stability and late-career attrition**, with retention shaped not by performance or satisfaction but by tenure thresholds that override local, behavioral, or individual performance dynamics.

3.14 Team Size

The data reveals a consistent relationship between team size, performance distribution, satisfaction outcomes, and turnover patterns, showing that large team environments can sustain high volumes of strong performers at scale, but also carry heightened variability, structural strain, and increased exit activity, particularly among early-tenure employees and mid-tier performers. Large teams (13–22 employees) contain the biggest concentration of high performance, especially in the Fully Meets category, where high counts coexist with moderate-to-high satisfaction levels, suggesting that large-scale environments are capable of generating consistent and reliable performance outcomes without broadly suppressing morale. However, large teams also exhibit a wider distribution of low-performing employees, including Needs Improvement and PIP cases, indicating that performance variability increases with team size, and that weaker contributors are more likely to be present, and often located within operational functions such as Production. This performance spread appears to be associated with structural complexity, uneven supervision capacity, and role fragmentation, which do not eliminate performance but create pockets of underperformance and dissatisfaction within otherwise productive teams.

Performance outcomes in large teams differ meaningfully by department. Production dominates numerically and exhibits both high volumes of strong performers and substantial termination counts across all performance levels, including employees who Fully Meet expectations. This pattern suggests that operational work in large units may produce strong output but also incurs a high frequency of exits, reflecting a work environment characterized by cyclical stress, standardized roles, or churn-prone labor dynamics. IT/IS in large teams shows steady concentrations of Fully Meets employees, but with noticeable terminations among average performers, indicating that technical roles may face exit risk not because of capability gaps but because of structural or contextual factors such as workload cycles, project turnover, or autonomy mismatches. Sales appears similarly volatile in large teams, with high performance present but

also elevated turnover concentrated among satisfied individuals, consistent with competitive, externally influenced work environments.

Satisfaction patterns in large teams show that high satisfaction and exit behavior frequently coexist. Across satisfaction levels 3–5, a substantial proportion of employees remain active, yet a meaningful number exit voluntarily, often despite reporting positive sentiment. This suggests that turnover in large teams is heavily opportunity-driven rather than dissatisfaction-driven, with satisfied individuals leaving for improved compensation, career mobility, or external incentives. Dissatisfaction among large-team employees is visible but not dominant; instead, dissatisfaction manifests most strongly at satisfaction levels 3 and 4 within Production, where mid-satisfaction employees exhibit both retention and exit outcomes, indicating a plateau effect where sentiment is neither poor enough to push employees out nor strong enough to anchor them long term.

Medium-sized teams (6–12 employees) display a markedly different ecosystem. Performance distributions are narrower, dominated by Fully Meets outcomes and relatively few high performers, suggesting stable but less extreme performance trajectories. Satisfaction levels in these teams are also more evenly distributed, with low termination rates across departments, indicating a stable employment environment with limited disruption, stronger interpersonal visibility, and fewer structural pressures. In technical functions, medium teams appear particularly suited to sustained performance, with employees showing high satisfaction and minimal exit behavior, a contrast to the volatility observed in larger IT/IS clusters. Terminations in medium teams are infrequent, and where they occur, salaries are often high and performance acceptable, suggesting exits are selective and tied to role-specific fit rather than systemic issues.

Small teams (1–5 employees) present a minimal variation environment characterized by uniformly strong performance, high satisfaction, and almost no turnover. Their stability reflects tightly defined roles, relational cohesion, and low redundancy, but they also show limited representation of low performers and almost no upward performance differentiation, implying environments where individual capability, role simplicity, or high trust eliminate variability. Small teams contain some of the highest compensation outliers, including executive and specialized technical roles, which remain stably retained, highlighting a low-volume, high-value employment structure that rarely experiences churn.

Team size also interacts with tenure in distinct ways. In large teams, the highest exit risk is concentrated among early-tenure employees (0–2 years and 2–5 years), regardless of satisfaction level. Many short-tenure employees who later exit report moderate or high satisfaction, indicating that early attrition may be driven not by negative experience but by job mobility, onboarding friction, role misalignment, or limited early-stage support. Longer-tenured employees (10–15 years) in large teams show high satisfaction and negligible turnover, indicating that once individuals overcome early friction, they embed deeply and remain highly stable. A transitional risk zone emerges between 5 and 10 years, where mid-tenure employees in large teams experience notable exit volumes, suggesting a period of plateau, stagnation, or reassessment that affects even competent and satisfied individuals.

Engagement patterns reinforce these tenure effects. Large teams contain large pools of highly engaged employees, but high engagement does not prevent turnover; rather, many engaged employees exit voluntarily, especially in Production and IT/IS. This indicates that structural or contextual factors drive turnover regardless of engaged behavior, and that engagement may coexist with unfulfilled aspirations or external market pull. Moderate and low engagement groups in large teams also experience termination, often concentrated in operational functions where disengagement appears rapidly consequential.

Compensation patterns differ across team sizes and further illuminate turnover dynamics. In large teams, terminated employees consistently earn less than retained peers within the same performance category, suggesting a compensation gradient that may influence turnover or termination decisions. In contrast, medium-sized teams have substantially higher salaries across all performance levels, including among terminated individuals, indicating more specialized work and different turnover triggers. Small teams combine high compensation with minimal turnover, highlighting selective staffing and alignment rather than performance volatility.

Recruitment source patterns align with team size and satisfaction outcomes. Large teams recruit heavily from broad market platforms such as Indeed, LinkedIn, and Google Search, generating both high satisfaction and higher mobility profiles. Employee referrals contribute to high satisfaction with fewer low-satisfaction cases and lower mobility, consistent with cultural compatibility and embedded networks. Medium and small teams show lower recruitment volume overall, with more selective sourcing and fewer dissatisfied hires.

Age patterns show that in large teams, early-tenure employees aged 30–49 and late-career hires aged 50–59 display high turnover, while long-tenured employees across all age groups are retained almost universally. This reflects an onboarding and transition challenge affecting core working-age populations more than experienced incumbents.

Finally, exit reasons in large teams reflect volitional mobility rather than disciplinary action. The majority of exits stem from “another position,” “more money,” and “unhappy,” complemented by work-life adjustments such as “career change,” “return to school,” and “hours.” Performance-based exits are rare, reinforcing that large-team turnover is not punitive but structurally enabled. Medium and small teams display very low exit counts and reasons associated with life events rather than dissatisfaction.

Taken together, the data reveals a structural pattern in which large teams produce the highest concentration of performance and satisfaction but also the highest volume of mobility and churn, particularly among early-tenure and average performers. Medium teams represent the most stable employment environment, with balanced performance and minimal turnover, while small teams function as tightly aligned, low-volume, high-value units with negligible churn and limited variation.

3.15 Special Projects Involvement

The data reveals a pronounced structural divide between roles with intensive special project involvement and those with little or none, producing two distinct labor systems characterized by different performance patterns, satisfaction dynamics, engagement behaviors, and exit mechanisms. High project involvement (4+ projects) is concentrated almost exclusively in knowledge-intensive departments such as IT/IS, Software Engineering, and specialized administrative functions, where employees overwhelmingly fall into positive performance categories, particularly “Fully Meets” and “Exceeds,” while underperformance is rare and quickly resolved through limited representation in “Needs Improvement” or PIP. This pattern suggests that access to complex, discretionary work is either allocated to already capable employees or reinforces capability development by creating avenues for visibility, cognitive challenge, and skill differentiation. At the same time, small clusters of underperformers in high-project technical environments imply that this work can expose skill gaps, cognitive overload, or misalignment in expectations, indicating that developmental assignments are not uniformly risk-free, especially in high-pressure technical contexts.

In contrast, employees with little or no project involvement (0–1 projects) are predominantly located in Production and Sales, where performance distributions are broader and more volatile, with large counts spanning “Fully Meets,” “Needs Improvement,” and PIP. Production, in particular, shows a heavy

concentration of low-visibility roles with high employee counts, a wide performance spread, and recurrent representation of performance remediation categories, indicating that operational work is characterized by variability, standardized tasks, and inconsistent performance outcomes. Notably, however, a substantial proportion of “Exceeds” performers appear in this low-project bucket, especially in Production, which signals that strong performance in operational work emerges through routine output rather than project-based recognition, and therefore remains largely disconnected from developmental pathways, institutional visibility, or career-enhancing opportunities. The middle project group (2–3 projects) is extremely small and appears to function as a transitional or rare configuration, populated primarily by Software Engineering and Admin Office roles and characterized by stability, high performance, and negligible exit risk, indicating that moderate developmental exposure is not a widespread organizational pattern but a localized feature.

Employee satisfaction patterns mirror this structural divide. High project involvement is associated with moderate-to-high satisfaction levels, particularly in IT/IS and Software Engineering, where satisfaction scores cluster in the 3–5 range and turnover is minimal. However, even within these environments, a minority of dissatisfied employees is present, particularly in IT/IS, implying that heavy project workloads can elevate stress, role overload, or unmet expectations for some individuals. Meanwhile, operational roles with low project exposure display broad distributions of satisfaction, including high volumes of moderately satisfied employees and significant termination counts in the mid-satisfaction tiers, suggesting an environment where employees remain neither strongly dissatisfied nor fully engaged, but experience limited progression, recognition, or empowerment, resulting in volatile employment continuity. Collectively, the system resembles a bifurcated workforce in which knowledge workers benefit from developmental enrichment that stabilizes satisfaction, while operational workers experience fluctuation driven by repetitive work, limited challenge, and restricted growth trajectories.

Engagement data reinforces these functional divides. High project involvement maps closely to high engagement, especially among long-tenured employees in technical roles, who show sustained motivation and retention even under cognitively demanding workloads. Within this group, employee engagement appears to be a function of role complexity, challenge, and identity rather than mere job duration. Conversely, early-tenured employees in high-project environments exhibit more frequent occurrences of moderate and low engagement, and occasional exits, indicating that intense workloads may be destabilizing for newcomers who have not yet developed organizational capital or adaptive coping strategies. Low project environments, particularly in Production, show a broad dispersion of engagement levels, with clusters of high engagement coexisting alongside moderate and very low engagement, and recurring termination events. This pattern suggests that engagement in operational units is neither systematically cultivated nor reinforced through developmental channels, producing episodic enthusiasm that is vulnerable to erosion under routine pressure. The small mid-project group again stands out for uniformly high engagement and stable retention, reflecting environments where employees experience enough novelty or challenge to support engagement, but not so much intensity as to strain capacity.

Gender patterns show subtle but meaningful variation. In high project environments, men and women both achieve strong performance outcomes, but men slightly outperform in the “Exceeds” category while also appearing more frequently in underperformance categories, implying that high project work amplifies performance variance for men more than women. Women, by contrast, display more stable performance profiles with fewer representation in extreme outcomes, both high and low, suggesting a flatter performance distribution under high project conditions. In low project environments, women are more likely to appear in “Exceeds,” while men concentrate more in Needs Improvement and PIP, indicating that low-challenge environments dampen male performance differentiation but allow female performers to excel within routine

constraints. Although the sample sizes for the medium project bucket are small, early evidence suggests that exceptional recognition may disproportionately flow to men even at moderate workload levels.

Turnover patterns provide the clearest evidence of structural divergence. Employees with high project involvement exhibit very low voluntary turnover, especially among high performers with high satisfaction. Exits from this group occur primarily among employees with performance or behavioral challenges, indicating that high project ecosystems operate under strict performance expectations, retaining only those who thrive in demanding conditions and removing those who do not. In low project environments, turnover is extensive and dominated by voluntary, opportunity-driven exits rather than performance-driven termination. High-performing employees with satisfaction levels of 3–5 frequently exit for reasons such as “another position,” “more money,” or “unhappy,” indicating that low developmental exposure correlates with latent mobility rather than disengagement or burnout. Underperformers in these environments often remain employed rather than being terminated, suggesting tolerance of mediocrity or weak performance governance, which stands in stark contrast to high-project environments where performance standards are more rigidly enforced. The medium project group again shows minimal turnover, indicating a potential equilibrium point where challenge, opportunity, and stability co-exist.

Tenure dynamics further differentiate these systems. In high project environments, mid- to late-career employees with established tenure display extremely high engagement, strong performance, and stable retention, while early-career employees show mixed engagement and higher exit rates, indicating that complex developmental workloads benefit experienced employees but impose transition strain on newcomers. In low project environments, early-career employees remain engaged but show little evidence of long-term retention, while mid-tenure employees exhibit strong voluntary exit behavior once they accumulate enough firm-specific knowledge to transition into better external opportunities, producing a delayed mobility effect rather than immediate turnover. Older employees in both buckets display stable retention, suggesting that late-career mobility is low regardless of project exposure.

Overall, the data reveals two distinct employment ecosystems operating simultaneously: high project environments characterized by capability concentration, high performance, high satisfaction, high engagement, and selective termination of weak performers; and low project environments characterized by performance variability, moderate satisfaction, episodic engagement, and heavy voluntary turnover among capable employees who lack access to developmental pathways or visibility mechanisms. Medium project environments exist only at small scale, but consistently display the most stable performance, satisfaction, engagement, and retention outcomes.

3.16 Late Employees

The data shows a highly stratified workforce based on short-term attendance behavior (days late over the last 30 days), which acts as a reliable indicator of performance quality, employee experience, and employment outcomes. Employees with zero lateness in the last month overwhelmingly cluster in the highest performance categories (“Exceeds” and “Fully Meets”), display high satisfaction and engagement, and are predominantly long-tenured mid-career employees. These individuals show high retention and, when they do leave, it is typically voluntary and opportunity-driven, rather than performance-driven — indicating that reliable attendance aligns with job fit, capability, and stability even within a short observation window.

In contrast, employees with high numbers of late days in the last month (5–6 incidents) show heavy concentration in low performance ratings (Needs Improvement, PIP), low engagement, and mixed or lower satisfaction. These short-term lateness spikes are not isolated events — they co-occur with broader behavioral risk, including involuntary terminations for performance, attendance violations, and

no-call/no-show exits. This indicates that struggles occurring in a recent 30-day window are not temporary lapses, but part of a deeper pattern of performance breakdown and disengagement. This group is concentrated among early- to mid-tenure employees (2–10 years) and mid-career age groups (30–49), suggesting a critical transition period where instability manifests behaviorally in the short term.

Employees with moderate lateness in the last month (3–4 incidents) also skew toward poor performance and lower satisfaction but show more variability in outcomes. Terminations occur for both disciplinary and voluntary reasons, and some high-salary employees with poor performance remain employed, indicating that recent attendance problems may be emerging symptoms, not yet triggering organizational action. This group sits between stability and risk, reflecting potential burnout, workload imbalance, or unresolved performance issues developing in real time.

By contrast, employees with minor lateness in the last month (1–2 incidents) closely resemble perfect attenders: high performance, high satisfaction, and stable employment. Their attendance patterns appear to reflect normal variance rather than systemic risk, suggesting that slight recent lateness is not a meaningful predictor of performance or turnover.

Across demographics, the patterns are consistent. Perfect attendance in the last 30 days correlates with strong performance and high satisfaction across genders, marital groups, and departments. Meanwhile, repeated lateness in the same short period is associated with performance risk and unstable outcomes regardless of demographic category. However, late single employees tend to cluster more heavily in low performance categories, while late married employees show slightly less severe performance outcomes, likely due to differences in tenure or job security rather than short-term behavior itself.

At the department level, operational and time-sensitive functions — especially Production and IT/IS — exhibit both the strongest performance among non-late employees and the most pronounced performance collapse among employees who were late in the last 30 days, suggesting that short-term unreliability has immediate performance consequences in these environments.

Recruitment patterns indicate that employees sourced from mainstream digital platforms can perform exceptionally well when they sustain perfect attendance in the last month, while those with multiple late days from the same sources disproportionately show low engagement and low performance. Referral hires rarely show multiple late days in recent data, reinforcing their stability even over short time horizons.

Age and tenure dynamics further demonstrate that short-term lateness is not random. Chronic lateness in the last month clusters among mid-career, mid-tenure employees, whereas perfect attendance dominates among experienced employees with long tenure, implying that recent lateness may signal instability during transition years rather than early onboarding or late-career decline.

Overall, the last 30 days of lateness behavior reflect meaningful, immediate indicators of employee trajectory: non-lateness aligns with stable, high-performing, satisfied talent, while repeated lateness corresponds to performance risk, disengagement, and increased likelihood of involuntary separation. These patterns show that short-term attendance data is not noise — it is an early marker of underlying workforce stability or disruption.

3.17 Absences

The dataset reveals that absenteeism in this organization is not a simple performance failure but a structural feature with deep variation across job context, tenure, career stage, and engagement. High and critical

absence groups contain large proportions of employees still rated as “Fully Meets,” particularly in Production and IT/IS, indicating that employees can remain reliably productive despite substantial time away. This pattern suggests that performance is not uniformly sensitive to absenteeism and that in certain environments, especially physically demanding or operational roles, high absence likely reflects contextual strain—such as workload cycles, fatigue, injury risk, or unpredictable scheduling—rather than low capability or poor motivation. Yet, at extreme absence levels there is a noticeable uptick in Needs Improvement and PIP ratings in Production, Sales, and Software Engineering, showing that chronic absenteeism increases the likelihood of performance breakdown, especially in roles with customer demands, revenue accountability, or specialized output dependencies.

Crucially, absenteeism does not translate automatically into punitive outcomes. Even in the highest absence categories, most employees remain active, often with acceptable performance ratings, and involuntary exits are rare relative to headcount. Instead, the dominant exit mode for high-absence employees is voluntary turnover, particularly among “Fully Meets” performers, indicating that high absence often precedes self-directed exit rather than employer-initiated separation. These exits reflect a workforce segment that remains competent and employable but may be experiencing burnout, job dissatisfaction, or external mobility. By contrast, the small cluster of forced exits among high-absence employees disproportionately involves individuals rated as Needs Improvement or in PIP, implying that termination occurs when absenteeism compounds low performance, rather than absenteeism alone being sufficient cause.

Absenteeism also shows a pronounced tenure gradient, with long-tenured employees—especially those with 10–15 years of service—overrepresented in high and critical absence categories while still maintaining high performance and near-zero termination rates. These employees frequently occupy “Exceeds” and “Fully Meets” categories and exhibit high retention even under extreme absence conditions, suggesting that tenure acts as a buffer against consequences. Meanwhile, employees with shorter tenure (0–5 years) show weaker performance, lower representation in high achievement categories, and greater likelihood of exit when absences are high, indicating that early tenure combines with absenteeism to produce instability. Mid-tenure employees (2–10 years) show disproportionate concentration of PIP ratings across absence levels, suggesting that capability and alignment struggles manifest most strongly in this cohort.

Patterns are also department-specific. Production and IT/IS dominate both high presence and high absence, reflecting their workforce scale and the operational pressure of core business functions. Production shows particularly high frequencies of both high performance and high absence, suggesting a workforce capable of sustaining output under strain but also susceptible to performance volatility when absence intensifies. IT/IS exhibits similar structural clustering but with fewer indicators of distress, hinting at greater task flexibility or autonomy. Sales and Software Engineering appear in smaller numbers, but absence in these departments is more directly associated with low performance and exits, showing that role type moderates tolerance for time away from work.

When examining absence and lateness jointly, absence severity emerges as a stronger predictor of turnover than lateness behavior. Employees with perfect punctuality still experience exits at high absence levels, while those with both high absence and lateness show elevated risk of termination, reinforcing that absenteeism volume, rather than punctuality, drives separation outcomes. Retention is highest among employees with low or moderate absence, regardless of lateness, indicating that overall attendance patterns carry more weight than daily reliability gestures.

Satisfaction interacts non-linearly with absence. Under low absence, satisfaction is uniformly high and exits are rare, while under critical absence, employees with mid-range satisfaction (3–4) show high exit rates,

reflecting both disengagement and life pressure. Conversely, employees with high satisfaction (5) show surprising resilience even under high absence, remaining active at substantial rates. These patterns are most visible in Production, where moderate-satisfaction employees split between retention and exit when absence intensifies, while IT/IS retains high-satisfaction staff regardless of absence severity.

Engagement presents a similar but more consistent moderating effect. High engagement mitigates the performance risks associated with high absence, with numerous cases of “Exceeds” and “Fully Meets” ratings observed even at critical absence levels. By contrast, low engagement correlates strongly with performance deterioration and exit, particularly in Production and Sales, suggesting that absenteeism is most destabilizing when combined with emotional disengagement. In moderate absence bands, engagement patterns split three ways: high engagement sustains performance, moderate engagement produces mixed outcomes, and low engagement becomes the early signal of risk.

The job role further modulates absence effects. Technical and leadership roles often maintain high performance even under critical absence, whereas operational roles show performance variability and exit risk. This suggests differentiated role resilience, where knowledge-based work can withstand time away but task-dependent work is more fragile to absence, especially prolonged or clustered absences.

Demographically, age and tenure jointly shape outcomes. Younger employees with short tenure are disproportionately represented among exits when absences are high, while older, long-tenured employees retain employment even with heavy absence loads, reflecting a workforce where organizational embeddedness, institutional knowledge, or role stability confer resilience. Across absence tiers, the most stable segment consists of mid-career employees with long tenure who show high performance, high satisfaction, and minimal exits.

Finally, termination reasons reveal a dominant narrative: even under severe absence levels, exits are driven primarily by voluntary mobility—“another position,” “unhappy,” “more money,” and “return to school”—rather than disciplinary actions. Involuntary exits remain numerically small and are concentrated among low performers within high absence segments, while voluntary exits are frequent among high performers, especially in high and critical absence groups, implying that absenteeism signals strain and impending mobility rather than immediate performance collapse.

3.18 Hire Season

Across hire seasons, the organization exhibits notable variation in performance, satisfaction, and retention outcomes, shaped by subtle interactions with marital status, gender, department, engagement, and attendance behaviors. Autumn hires show a strong concentration of employees achieving “Fully Meets” ratings, particularly among Single and Married employees, suggesting this seasonal cohort achieves rapid stabilization in performance. Divorced employees in Autumn are present but slightly less represented in “Exceeds” ratings, indicating potential constraints on peak performance. Spring hires share a similar distribution but show elevated “Needs Improvement” and PIP occurrence among Single and Married staff, hinting that Spring intakes encounter early developmental friction. Summer employees show fewer top performers but stable representation in “Fully Meets,” while Winter hires show greater variability in both high and low ratings, suggesting seasonal onboarding dynamics influence early performance alignment.

Satisfaction patterns largely mirror performance tendencies. Autumn and Summer hires, particularly among Single and Married staff, consistently exhibit mid-to-high satisfaction ratings, indicating strong early engagement for these cohorts. Divorced employees often report strong high-level satisfaction in Autumn but show variability across other seasons. Winter hires show dispersed satisfaction across mid-to-high levels,

especially among Single and Married employees, reflecting mixed workplace integration experiences tied to seasonal timing. Across demographic groups, satisfaction patterns suggest that engagement outcomes are shaped by both hire timing and life-stage demographics.

Departmental placement varies strongly by season, with Production consistently absorbing the largest share of new hires across all marital and gender categories, indicating its centrality to workforce expansion. IT/IS shows steady representation, especially among Married employees in Autumn and Winter, while Admin Offices, Sales, and Software Engineering remain smaller but exhibit occasional seasonal shifts. Overall, staffing patterns indicate that Production is the default destination for seasonal recruitment surges, whereas technical and specialized departments experience smaller, targeted hiring flows.

Gender-linked performance dynamics show that women consistently dominate the “Fully Meets” category across all hire seasons, with particularly strong representation in Autumn and Winter. Men maintain stronger proportional representation in “Exceeds” ratings, suggesting a modest polarization where male performance clusters at both high and low ends, while female performance is more consistently mid-to-high. PIP and Needs Improvement are generally low for both groups, but men show slightly higher underperformance in Spring, indicating seasonal variability in early alignment or fit.

Satisfaction trends by sex further reinforce the gendered performance patterns. Female hires report higher satisfaction scores, especially in Autumn and Winter, indicating effective integration or positive work expectations. Male hires show more dispersed satisfaction levels, with stronger mid-level concentrations and fewer top-tier ratings, suggesting modest differences in experience rather than systematic dissatisfaction. Seasonal effects are apparent: Spring produces wider variation in satisfaction for both sexes, while Summer shows moderate satisfaction with slight upward trends for women.

Production remains the workforce epicenter across gender and season, consistently showing the highest hire volumes and broad performance distributions. Technical roles such as IT/IS show balanced representation with stable performance outcomes. Departments like Sales, Software Engineering, and Admin Offices have smaller headcounts but show occasional performance variability tied to season. Department-level analyses across seasons reveal that variability in early performance is most pronounced in Production, especially during Winter and Spring.

Employment status patterns across seasons reinforce departmental trends. Production shows high active headcount in all seasons, but also experiences persistent voluntary turnover, particularly in Autumn, Spring, and Winter. IT/IS shows stable active employment but noticeably higher voluntary and forced exits in certain seasons, especially Winter, suggesting episodic retention challenges. Smaller departments show relatively stable retention with occasional spikes tied to small sample effects. Seasonal turnover appears higher in Summer and Winter for Production and IT/IS, indicating periods of structural workforce flux.

Performance outcomes by employment status reveal that most active employees across all seasons cluster into “Exceeds” or “Fully Meets,” indicating strong overall quality of hire. Voluntary exits are disproportionately composed of “Fully Meets” performers, suggesting that capable employees leave at moderate rates regardless of season. Terminated-for-cause cases are rare, primarily clustered among underperformers, indicating selective performance-based intervention.

Satisfaction patterns by employment status further emphasize that most active employees report mid-to-high satisfaction, especially in Autumn and Spring. Voluntary exits frequently involve employees with moderate-to-high satisfaction, indicating that departing staff may not be dissatisfied, but are likely

influenced by external pull factors. Forced exits are rare and not concentrated at low satisfaction, suggesting that dissatisfaction is weakly predictive of involuntary separation.

Seasonal performance variation by department shows that Production hires across all seasons consistently achieve “Fully Meets” ratings, with pockets of “Exceeds” and occasional underperformance during Spring and Winter. IT/IS hires show stable performance with small seasonal dips. Sales and Software Engineering show isolated underperformance in Autumn and Spring, reflecting role-specific variability.

Satisfaction by department further confirms that Production dominates mid-to-high satisfaction levels, with greater dispersion during Summer and Spring. IT/IS shows consistently high satisfaction, while smaller departments register occasional low-satisfaction individuals depending on season.

Lateness patterns highlight marked departmental differences. Production contains both the highest number of employees with perfect punctuality and the highest concentration of chronic lateness, reflecting polarized attendance behaviors in a large operational workforce. IT/IS and Admin roles show almost exclusively perfect attendance with minimal lateness. Seasonal patterns show slightly higher lateness in Production during Summer and Winter.

Joint analysis of performance, satisfaction, and lateness reveals predictable patterns: employees with perfect punctuality cluster heavily in “Exceeds” and “Fully Meets” categories, while chronic lateness correlates with elevated PIP and Needs Improvement ratings. Seasonal variation appears modest, with Summer showing slightly higher underperformance among chronically late employees.

Satisfaction and engagement dynamics show clear alignment: high satisfaction correlates strongly with high engagement, and low satisfaction correlates with low engagement. Seasonal effects shape distribution rather than structure: Spring and Winter show more moderate engagement among mid-satisfaction employees, possibly reflecting onboarding dynamics.

Attendance and engagement patterns reinforce this relationship. Perfect punctuality dominates high-engagement categories in all seasons. Chronic lateness is strongly predictive of low engagement. Seasonal variation affects frequency but not direction.

Special projects analysis combined with lateness reveals that employees with strong punctuality disproportionately populate high project involvement groups, while late employees are concentrated in low project buckets. Seasonal effects are small.

Lateness and absence patterns jointly show that perfect attendance dominates all absence levels, including high and critical, indicating that absenteeism is often driven by long-term absence events rather than daily punctuality behavior. Chronic lateness is minimally present in high-absence groups, suggesting distinct employee profiles.

Termination reasons across seasons reveal extremely high rates of continued employment, with voluntary exit driven by career mobility or dissatisfaction and involuntary exit extremely rare. Seasonal variation affects frequency but not underlying cause distribution.

4. Business Recommendations

4.1 Build a tiered Retention Strategy focused on Mod-career, Operational Talent

The most urgent strategic risk is concentrated turnover among mid-career operational employees who “fully

meet” expectations yet exit at high rates. This group is not leaving due to poor performance but due to structural and economic factors: repetitive work, low mobility, burnout, and external labor market opportunity. Given their scale and their economic value during peak productivity years, retention strategy should explicitly target this segment with role redesign, career lattice pathways, and reward structures that emphasize stability after 3–5 years. Rather than attempting to retain all early-tenure operational hires, the organization should intentionally accept some churn early, while investing in differentiated retention for incumbents who demonstrate sustained performance and tenure progression. This stabilizes workforce capacity, reduces replacement costs, and preserves institutional knowledge.

4.2 Introduce Structured Career Progression for Production Roles to Counter Two-Speed Workforce Dynamics

The organization operates a dual labor system: high-development, high-recognition technical roles with excellent retention, and low-development, high-churn operational roles that rely on standardized work and offer limited advancement. This “two-speed” talent architecture erodes engagement and drives voluntary exits among capable operational staff. HR should design structured career progression for production teams, including lateral skill acquisition, “micro-leadership” rotations, and formal intermediate levels between entry technician roles and supervisory positions. Importantly, high-performing operational employees who show consistent performance should access stretch roles or project-based work, not only technical experts. By opening developmental pathways beyond technical elites, the organization can reduce structural inequity, increase mobility, and transform routine work into career-building work.

4.3 Reform Performance Management to Focus on Early Warning Signals Rather Than Back-End Terminations

Behavioral indicators such as lateness and absenteeism provide early, predictive signals of performance breakdown, disengagement, and exit risk—especially during mid-career periods. Rather than relying on performance remediation after deterioration becomes entrenched, HR should create early-intervention mechanisms triggered by short-term attendance patterns. This could include automated alerts, coaching sessions, resource support, or workload adjustments. The evidence shows late behavior precedes performance decline—not the other way around—making it a valuable, low-cost forecasting tool. This proactive approach reduces punitive exits, protects capability during transition periods, and reinforces employee support rather than surveillance.

4.4 Address Structural Turnover Drivers for Long-Tenured Employees to Prevent Loss of Institutional Capital

The organization experiences near-universal exit among long-tenured staff beyond eight years, disproportionately impacting high performers with high satisfaction and engagement. These exits are not tied to performance failures, dissatisfaction, or leadership issues, but structural pressures such as stagnant rewards, burnout, or career ceiling effects. To reverse this pattern, HR should implement long-tenure renewal mechanisms—including sabbatical leave, senior apprenticeship pathways, specialized expert roles, or compensation restructuring tied to institutional knowledge. The objective is to create reasons to stay after capability peaks, rather than drift toward exit climaxes at the most valuable point in an employee’s lifecycle.

4.5 Strengthen Managerial Capability in High-Churn Operational Environments

Turnover clusters around particular managers in production functions, not due to demographic bias, but due to broader structural features: team size, workload pressure, supervision style, and local job design. HR should invest in targeted leadership development for operational managers focusing on workload planning, coaching, fair performance enforcement, and early support for at-risk staff. Since managers in stable teams retain both high and low performers with minimal turnover, best practices exist internally and could be

codified. Investing in frontline leadership is not merely a training intervention; it is a workforce stability strategy that addresses the largest structural driver of turnover.

4.6 Realign Compensation Strategy to Reward Retention and Performance Without Reinforcing Inequity

Compensation inequalities across departments and roles reflect legitimate skill differentials but risk exacerbating voluntary exits among mid-career employees who meet or exceed expectations yet lack economic progression. Compensation design should consider tenure-linked step increases, retention bonuses for critical roles, and skill-based pay that rewards progression without requiring promotions. However, compensation alone will not offset structural dissatisfaction; it must coincide with career architecture, recognition, and workload redesign. In technical roles, performance variability is low and termination infrequent, indicating compensation equilibrium; however, operational roles require economic incentives aligned with retention inflection points, especially at 2–5 years.

4.7 Optimize Recruitment Channels Based on Stability, Not Volume

Employee referrals and LinkedIn consistently deliver high-performing, satisfied, long-tenured employees with low termination risk, while mass-market platforms produce high hiring volume but poor tenure outcomes. Recruitment strategy should prioritize high-value channels for roles requiring capability continuity, especially technical and leadership positions, while using volume-based platforms strategically for roles with expected churn. However, recruitment cannot compensate for weak job architecture; HR must evaluate not only where hires come from but whether job demands enable sustainability. Building internal referral programs, alumni networks, and professional partnerships will increase organizational embeddedness and reduce reliance on transactional hiring.

4.8 Recalibrate Team Architectures to Balance Scale with Stability

Large teams can sustain high performance at scale but experience elevated churn, especially among early-tenure and mid-tier performers, driven by structural strain and behavioral invisibility. By contrast, medium-sized teams show strong stability, high satisfaction, and minimal churn. Restructuring work units toward medium-sized clusters—where feasible—can improve supervision, visibility, and capability development. Where large teams are unavoidable, HR should invest in distributed leadership structures, e.g., team leads, peer mentoring, microteams for onboarding. This softens the volatility of large-scale environments without sacrificing scale.

4.9 Expand Project-Based Development Access to Reduce Voluntary Turnover of Capable Operational Staff

Project involvement is associated with high performance, satisfaction, and engagement, but access is highly unequal and concentrated in technical roles. High performers in operational jobs exit voluntarily not because of poor experience but because of a lack of developmental visibility. Expanding project work to operational employees—especially mid-tenure—creates mobility, recognition, and capability development. This will reduce “talent drain” among employees who perform well but lack upward pathways and convert latent potential into embedded value. Projects should be framed as learning, innovation, and exposure—not just technical assignments.

4.10 Implement Seasonally Tailored Onboarding and Support Based on Hire Timing Risks

Performance, satisfaction, and retention vary meaningfully by season, with some cohorts experiencing early friction and higher exit risk. Instead of uniform onboarding, HR should tailor induction, training, and support based on seasonal workforce dynamics. Spring intakes may need early skill development; Winter hires may need integration follow-ups; Summer hires may benefit from workload pacing or mentoring. Seasonal risk patterns are small individually but accumulate across a large workforce, making targeted onboarding a cost-effective improvement lever.

4.11 Use Attendance Analytics to Segment Employees Into Risk Groups for Proactive Support

Short-term lateness and longer-term absence patterns are powerful indicators of employee trajectory and retention risk, especially among mid-tenure staff. HR should monitor attendance signals holistically—not for punitive action—but to segment employees into risk cohorts requiring support, workload redesign, mental health resources, or realignment conversations. Because chronic absence is often linked to burnout rather than low capability, supportive intervention is more effective than discipline. Attendance analytics should therefore be incorporated into workforce planning as a predictive indicator of disruption, not a compliance metric.

4.12 Build Retention Infrastructure for High-Performing Talent in Technical Roles

Although technical roles show strong retention overall, the few early-tenure exits that do occur are economically costly because they involve high performers with high compensation. HR should deploy “early engagement anchors” for technical employees within the first 2–3 years: professional identity programs, mentorship, career mapping, and incentive structures tied to expertise development. Preventing even a small number of early exits in high-skill roles delivers disproportionately high ROI.

5. Conclusion

Overall, the organization exhibits strong workforce capability, high engagement, and a solid base of long-tenured employees, yet its talent ecosystem suffers from deep structural imbalances that undermine long-term stability and suppress retention among valuable mid-career contributors. Performance outcomes are consistently high across most roles, and employees rarely exit due to poor capability or dissatisfaction; instead, turnover is driven by systemic factors such as limited career progression, workload strain, uneven access to developmental opportunities, and compensation structures misaligned with tenure-based value creation. The workforce is bifurcated between high-development technical roles with strong stability and low-development operational roles with predictable churn, producing a labor architecture that is efficient but not sustainable. Behavioral indicators such as lateness and absence act as early signals of emerging risk rather than isolated disciplinary issues, particularly during mid-tenure periods when volatility peaks. Long-tenured employees demonstrate strong performance and high satisfaction but exit at late-career inflection points due to stagnation and unmet expectations, resulting in costly loss of institutional knowledge precisely when its value is greatest. Recruitment channels further reinforce this dynamic, with network-based sources creating durable talent pipelines while mass-market platforms generate high throughput but weak retention. Ultimately, the organization is not struggling with individual performance deficits but with structural misalignment between role design, career paths, and employee lifecycle needs. To achieve sustainable workforce performance, HR strategy must move beyond managing performance outcomes toward redesigning work, development, compensation, and leadership systems to support the evolving needs of employees across early, mid, and late career stages.