People Analytics Case Study

Employee Lifecycle Insights & Attrition Strategy

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Target Role: Data Analyst, People Tech — Tabby

1.0 Executive Summary

This case study details a comprehensive people analytics initiative undertaken to diagnose critical challenges within the employee lifecycle. By analyzing a synthetic dataset of 1,500 employees over a four-year period, we identified key bottlenecks in the hiring funnel, pinpointed the primary drivers of voluntary attrition, and uncovered significant workforce trends. The project leveraged a robust methodology combining SQL, Python, and dashboard visualization to transform fragmented data into a strategic asset. The outcome is a set of actionable, data-driven recommendations designed to improve hiring efficiency, enhance retention, and build a more resilient workforce.

2.0 Problem Statement

The organization faced three interconnected challenges that hindered strategic people operations:

Inefficient Hiring: Despite high application volume, the hiring funnel suffered from significant drop-offs and a lengthening time-to-hire, straining recruiting resources.

Unexplained Attrition: Critical teams experienced concerning levels of voluntary turnover without a clear, data-backed understanding of the underlying causes.

Data Fragmentation: People data was siloed across multiple systems (HRIS, ATS, spreadsheets), preventing a single source of truth and holistic analysis.

3.0 Data Sources & Preparation

Data was consolidated from the following sources:

HRIS: Employee demographics, job history, salary, performance ratings, and termination data.

ATS: Candidate pipeline stages, application dates, and offer statuses.

Supporting Data: Compensation benchmarks (compa-ratios) and anonymized exit interview summaries.

A dedicated Python data quality script was implemented to automate checks for duplicates, missing critical fields, invalid dates, and ATS-HRIS sync inconsistencies, ensuring analysis reliability.

4.0 Methodology: A Four-Step Analytical Workflow

SQL (BigQuery) for Data Wrangling & Cohort Analysis

- Created rolling workforce snapshots to track headcount over time.

- Calculated hiring funnel KPIs (conversion rates, time-to-hire).

- Built attrition cohorts to analyze turnover by tenure, department, and manager.

Python for Statistical Modeling & Forecasting

- Logistic Regression to identify predictors of attrition.

- Feature Importance ranking for drivers like compa-ratio, tenure, workload.

- Time-series forecasting for attrition and headcount.

Dashboards for Visualization & Monitoring

Interactive Looker Studio dashboard showing workforce health, hiring metrics, and attrition trends.

Synthesis for Actionable Storytelling

Complex findings translated into clear insights and strategic recommendations.

5.0 Key Findings & Detailed Analysis

5.1 Hiring Funnel Insights

- Screening Drop-off: 47% of applicants lost at initial screening.

- Time-to-Hire: Increased 32% YoY.

- Offer Declines: 18% decline rate due to compensation gaps and slow cycle times.

5.2 Attrition Deep Dive

- Overall voluntary attrition: 14.7%.

- High-risk employees: first-year tenure, low compa-ratio (<0.9), recent manager changes.

- Attrition drivers: workload, performance pressure, salary gaps, manager transitions.

- Tenure risk peaks at months 4, 9, and 14.

5.3 Employee Lifecycle Trends

- Headcount up 26% YoY.

- Stable performance distribution.

- Low internal mobility contributed to attrition risk.

6.0 Recommendations & Strategic Actions

Optimize the Hiring Funnel

- Redesign screening criteria.

- Recruiter scorecards.

- SLA-based interview scheduling.

Structured Onboarding & Check-ins

- 30-60-90 onboarding program.

- HR & manager touchpoints at months 4, 9, 14.

Targeted Compensation Review

- Review low compa-ratio employees.

- Market benchmarking.

Build Integrated People Insights Layer

- BigQuery warehouse.

- Automated pipelines.

- Standardized KPI layer.

7.0 Conclusion

People analytics enables organizations to move from reactive reporting to proactive strategy. By understanding the "why" behind hiring and attrition challenges, companies can implement solutions that strengthen retention, improve hiring efficiency, and build a resilient workforce.