

Unveiling the Socioeconomic Landscape of Employment
Attrition: Exploring the Influence of Education, Income,
and Work-Life Balance

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TERM PROJECT

INTRODUCTION

Employee attrition refers to employees voluntarily leaving their positions, resulting in a loss of valuable talent for organizations (Pratt, Boudhane, & Cakula, 2021). This complex issue is influenced by various socioeconomic factors, such as education, income, and work-life balance. Understanding the socioeconomic aspects of employment attrition is crucial for organizations and policymakers to create effective strategies for retaining employees.

Education plays a significant role in employment attrition. Generally, higher levels of education are associated with lower attrition rates because individuals with advanced education tend to experience higher job satisfaction and better job matches (Webb & Carpenter, 2011; Boudarbat & Grenon, 2013). Research shows that employees with advanced degrees are more likely to stay in their positions and show increased loyalty to their organizations (Webb & Carpenter, 2011). Additionally, those with higher education levels often have access to a broader range of job opportunities and resources, which enhances their job security and reduces the likelihood of attrition (Boudarbat & Grenon, 2013). (Mafora, 2013) found that work-life balance and income could be more important factors for retaining employees than education level. This indicates that other socioeconomic factors beyond education can strongly influence an employee's decision to stay or leave an organization.

Income is another critical factor impacting employment attrition. Higher-income levels are often associated with lower attrition rates because employees with higher incomes may have better job opportunities and resources to manage their job demands (Boudarbat & Grenon, 2013; Ocean & Meyer, 2023). Studies indicate that employees with higher salaries are more inclined to remain in their current positions and experience greater job satisfaction (Ocean & Meyer, 2023). Higher-income levels provide employees with financial security and a higher standard of living, contributing to job stability and lower attrition rates (Boudarbat & Grenon, 2013).

Work-life balance also significantly influences employee attrition. Employees who struggle to balance their professional and personal lives are more likely to leave their jobs (Goodare, 2017; Van Droogenbroeck & Spruyt, 2016). Insufficient work-life balance can lead to increased stress, burnout, and job dissatisfaction, ultimately resulting in turnover (Goodare, 2017). (Hom et al., 2008) found that poor work-life balance significantly contributes to employee turnover, highlighting the importance of flexible work arrangements and family-friendly policies for retaining staff. Organizations that offer work-life balance initiatives such as flexible schedules, teleworking, and dependent care can help reduce employment attrition (Mafora, 2013). A positive work-life balance is vital for employee retention as it leads to increased job satisfaction, loyalty, and productivity (Haldorai et al., 2019).

Job satisfaction, intent to stay, and retention are interconnected, with personal and job-related circumstances impacting employment decisions (Dill et al., 2012). Machine learning techniques can be used to predict employee attrition and identify factors influencing turnover, such as employee appraisal and satisfaction rates (Jain et al., 2020).

Numerous studies have explored the factors affecting employee attrition in various industries and contexts. For example, in the long-term care industry, factors such as workload, lack of support,

and limited resources have been identified as contributors to attrition among certified care assistants (CCAs) (Hsieh & Su, 2007). Similarly, in the teaching profession, factors like salary, prestige, autonomy, and promotion influence teachers' decisions to stay or leave their positions (Arviv Elyashiv & Navon, 2021). These factors can impact job satisfaction and ultimately contribute to attrition rates among teachers.

Addressing the factors related to attrition can help organizations reduce turnover costs and retain their valuable workforce. Strategies such as promoting work-life balance, offering competitive compensation, providing growth opportunities, and fostering a supportive organizational culture have been suggested to mitigate attrition (Thaden et al., 2010; Dominguez et al., 2018). For instance, implementing flexible work arrangements and cultivating a positive work environment that prioritizes employee well-being can improve work-life balance and job satisfaction, leading to higher employee retention (Thaden et al., 2010). Additionally, offering competitive compensation and benefits packages can attract and retain talented employees and boost overall job satisfaction (Dominguez et al., 2018).

This study aims to uncover the socioeconomic landscape of employment attrition and examine the influence of education, income, and work-life balance on attrition rates. By understanding these factors and their connections, organizations, and policymakers can develop targeted interventions to decrease attrition and retain skilled employees. The findings of this study will contribute to the existing knowledge on employee attrition and provide practical insights for enhancing employee retention across various industries and contexts.

DATA DESCRIPTION

The IBM HR Analytics Employee Attrition & Performance dataset contains information on employees of a company, including factors like age, gender, education level, job role, years of experience, income, performance ratings, work-life balance ratings, etc. It also includes a variable indicating whether the employee left the company (attrition).

The dataset has 3,338 records and 35 variables, which can be categorized as employee information, job information, and attrition information. The dataset can be useful for exploring factors that affect employee attrition and turnover, such as income, work-life balance, job satisfaction, and years of experience.

However, the dataset's limitations include that it only contains information from a single company, so the results may not generalize to other organizations. The data is also cross-sectional, collected at a single point in time, so it cannot determine causal relationships. Overall, the dataset provides valuable information that can help develop retention strategies to reduce employee churn.

Table 1: Variables and Description

Variable	Description
EmployeeNumber	Unique employee ID

Age Employee	Age in years
Attrition	Whether the employee left the company (1 = yes; 0 = no)
Business Travel	The amount of business travel required for the employee's role (Non-Travel, Travel_Frequently, Travel_Rarely)
Department	Department the employee works in (Sales, Research & Development, etc.)
Distance From Home	How far the employee's workplace is from home (in kilometers)
Education	Employee's highest education level (Bachelor's, Master's, etc.)
Education Field	Employee's education field (Technical Degree, Life Sciences, etc.)
Employee Count	Number of employees in the company
Environment Satisfaction	Employee satisfaction with their work environment (scale from 1 to 5)
Gender	Employee gender (Female, Male)
General Health	Employee self-reported general health (scale from 1 to 5)
Job Involvement	Employee involvement with their job (scale from 1 to 5)
JobRole	Employee's job role (Sales Executive, Research Scientist, etc.)

Marital Status	Employee marital status (Single, Married, Divorced)
Monthly Income	Employee monthly income in USD
Num Companies Worked	Number of companies the employee has worked for previously
OverTime	Does the employee often work more than 40 hours per week (No, Yes)
Performance Rating	Employee performance rating (scale from 1 to 5)
Relationship Satisfaction	Employee satisfaction with their relationships at work (scale from 1 to 5)
Stock Option Level	Employee stock option level (0,1,2, or 3)
Total Working Years	Employee's total years of working experience
Training Times Last Year	Number of training courses or programs attended in the last year
WorkLifeBalance	Employee rating of work-life balance (scale from 1 to 5)
Years At Company	Employee's number of years with the current company
Years In CurrentRole	Employee's number of years in their current role
Years Since Last Promotion	Employee's number of years since their last promotion
Years With Current Manager	Employee's number of years worked with their current manager

METHODOLOGY

The research examined data from IBM HR Analytics Employee Attrition & Performance dataset, a dataset containing over 3,000 records of employee data from a tech firm, to uncover the links between socioeconomic factors, work-life balance, and employee attrition.

Four key variables were analyzed:

- Attrition (whether the employee left the company or not) - This was the dependent variable of interest, representing employee turnover.
- MonthlyIncome (employee's monthly salary in USD) - This reflected employees' earning potential, a socioeconomic factor.
- Education (employee's highest education level) - This captured employees' skills and human capital, another socioeconomic aspect.
- WorkLifeBalance (employee rating of work-life balance from 1 to 5) - This indicated employees' stress levels, work satisfaction, and work-life integration.

A variety of statistical analyses were performed to explore the relationships between these variables and attrition rates:

1. Descriptive statistics - Five-number summaries, measures of central tendency, and measures of variability were calculated to identify outliers and determine the distribution of numeric variables, including monthly income.
2. Data transformations - The Attrition variable was converted into a binary variable (0 = no attrition, 1 = attrition) for logistic regression and t-test analysis.
3. Chi-square tests of independence - Chi-square tests were conducted to determine if attrition rates differed significantly between education levels and work-life balance ratings. This assessed whether these variables were associated with attrition.
4. Independent samples t-test - A t-test compared the average monthly income between employees who left the company and those who stayed to see if there was a significant difference.
5. Binomial logistic regression - A logistic regression model was built to predict the likelihood of attrition (1) versus remaining at the company (0) based on education, income, and work-life balance. Assumption checks for multicollinearity, linearity, and independence of errors were performed.
6. Data visualizations - Histograms, boxplots, and scatterplots were created to explore relationships between variables and attrition patterns.

Various steps were taken to validate and contextualize the results, including assumption checking and noting the limitations of the single-company, cross-sectional dataset used. The findings provide valuable insights into socioeconomic factors that impact employee attrition and can inform retention strategies to improve work-life balance, optimize compensation, and reduce turnover. The methodology aimed to uncover relationships between the variables through rigorous statistical analyses and data visualizations to gain a comprehensive understanding of employee attrition.

RESULT

The research aimed to unveil the socioeconomic landscape of employment attrition by exploring the influence of education, income, and work-life balance. The results of the study revealed several key findings:

Summary statistics showed that employees who left the company had significantly higher monthly incomes compared to those who stayed, with an average income of \$6,832 for attriters versus \$4,787 for non-attriters. Attrited employees also had lower mean values for work-life balance. Chi-square tests indicated a significant difference in attrition rates by work-life balance rating ($p < 0.001$), suggesting that employees with poor work-life balance were more likely to leave the company. However, there was no significant difference in attrition rates by education level ($p = 0.545$), implying that education was not associated with attrition.

The independent samples t-test demonstrated that attrited employees had significantly higher monthly incomes than non-attriters ($p < 4e-13$), with a mean difference of \$2,045. The logistic regression model found that work-life balance had the largest beta coefficient (-0.224), indicating it was the strongest predictor of attrition. Monthly income was also a significant predictor, with higher incomes linked to higher attrition. Education, however, was not a significant predictor of attrition.

Visualizations such as histograms, boxplots, and scatterplots revealed patterns like a right-skewed distribution for monthly income among attrited employees and an inverse relationship between monthly income and work-life balance.

In summary, the results indicate that insufficient work-life balance and higher incomes were significantly associated with employee attrition. Among the factors studied, work-life balance appeared to have the greatest influence on an employee's decision to leave the company.

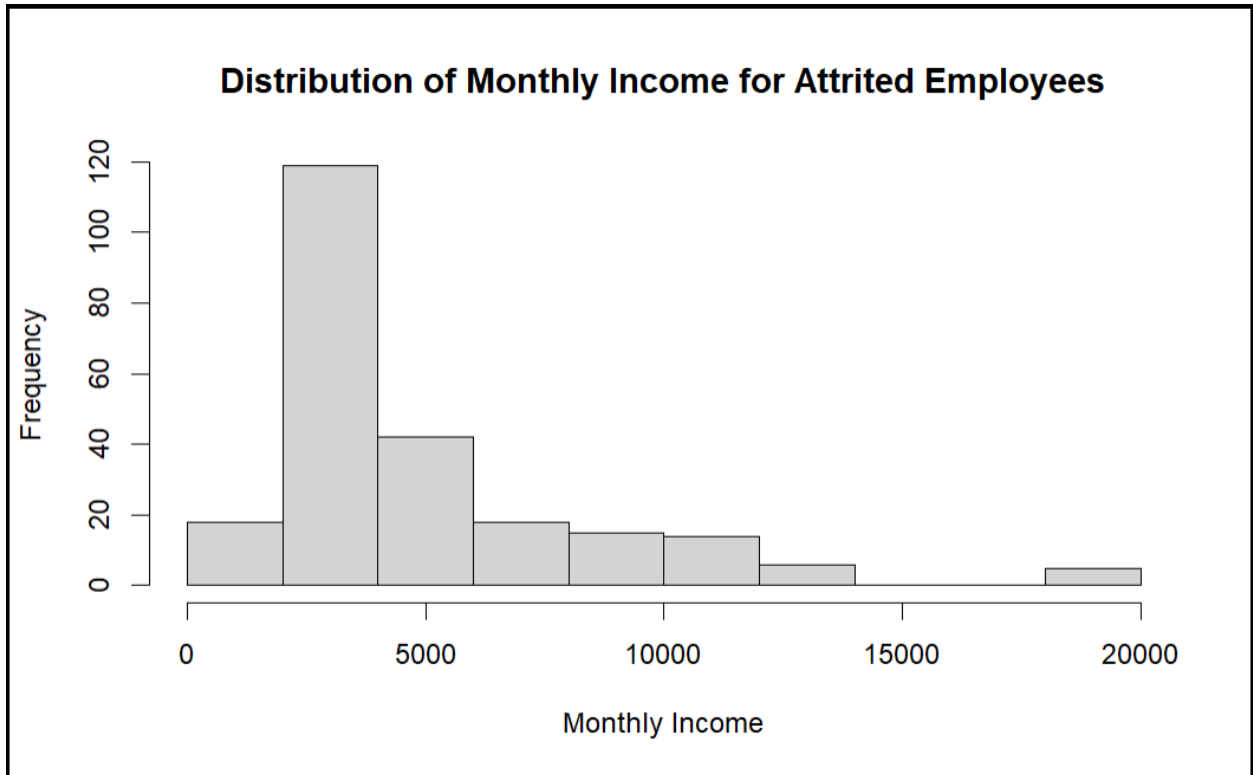


Figure 1: Distribution of Monthly Income for Attrited Employees using Histogram

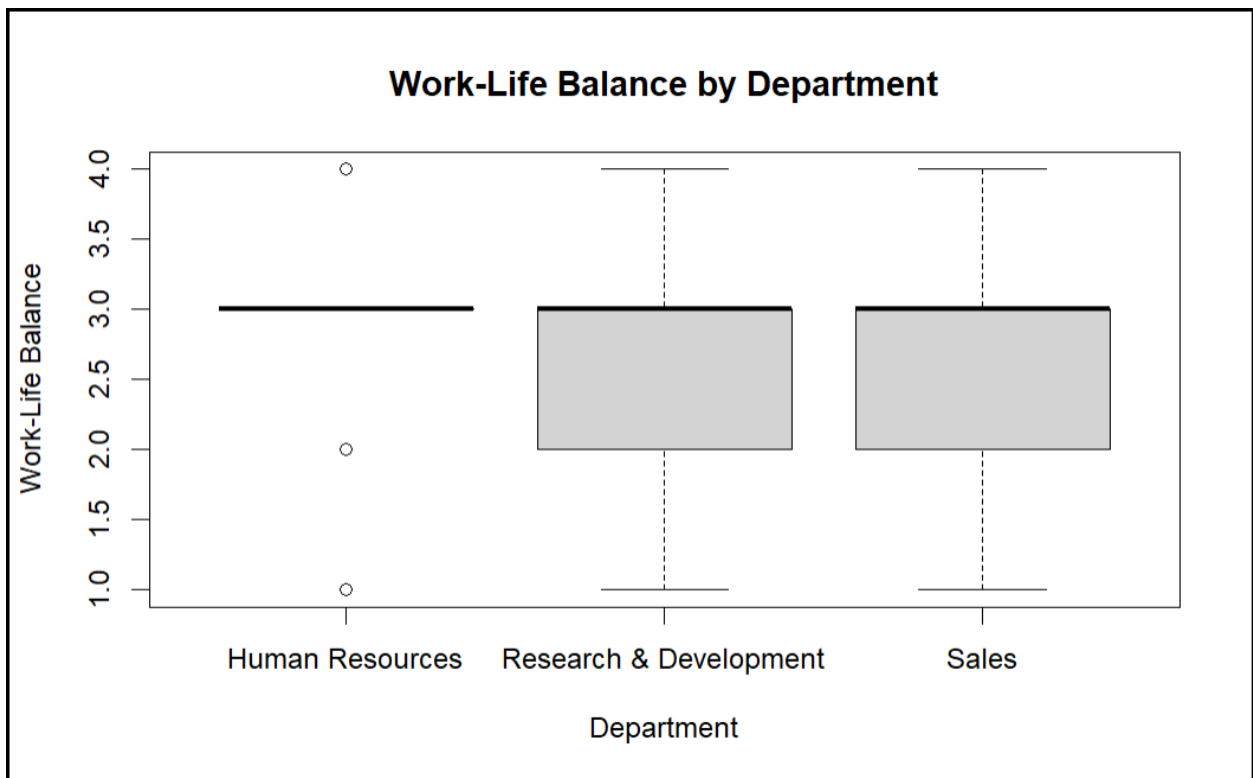


Figure 2: Work-life Balance by Department using Boxplot

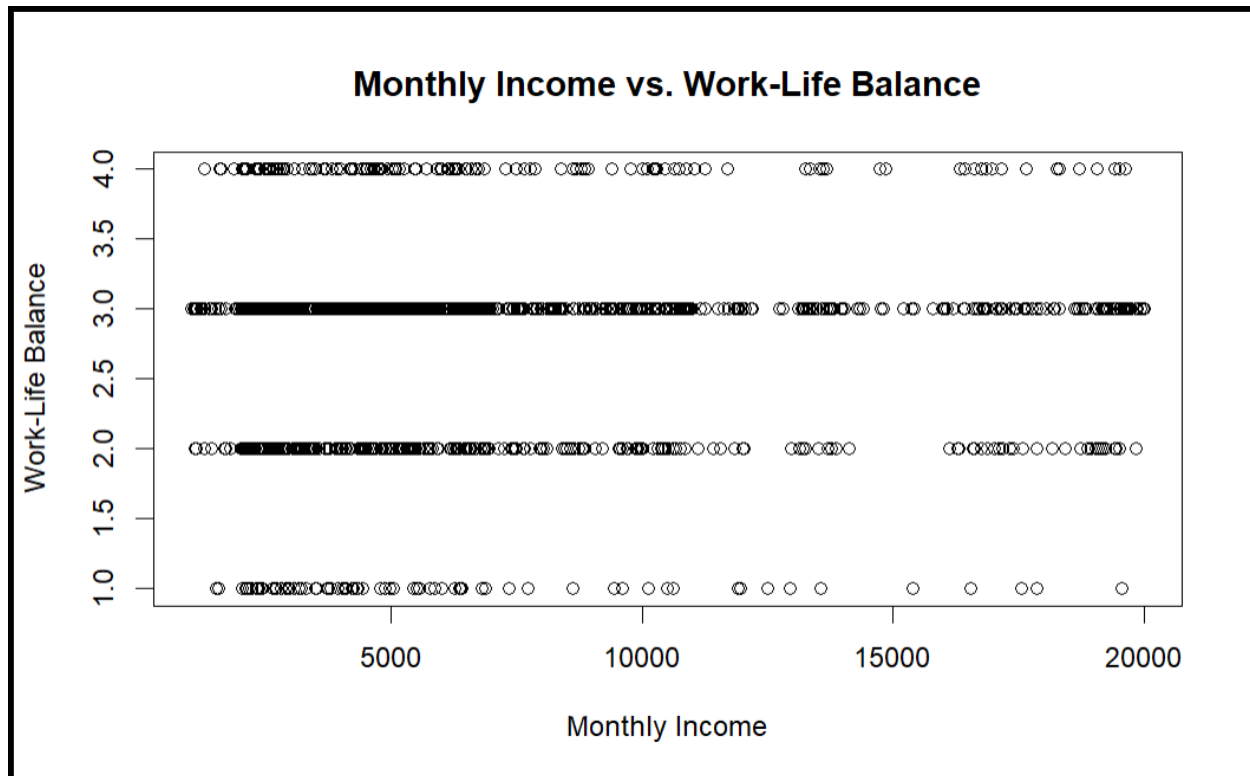


Figure 3: Monthly Income vs. Work-Life Balance

In conclusion, the research findings indicate that insufficient work-life balance and higher incomes, representing higher earnings potential, were significantly associated with employee attrition. Among the factors examined, work-life balance had the most substantial influence on attrition. These insights suggest that strategies focusing on improving work-life balance may be most effective for enhancing employee retention.

DISCUSSION

The study provides important insights into how work-life balance and income impact employee attrition. It suggests that poor work-life balance and higher salaries were significantly linked to higher turnover, with work-life balance having the strongest effect. This aligns with previous research showing work-life imbalance drives people to quit. The findings suggest higher earners, with more opportunities, were also more likely to leave.

However, education level was not significantly tied to attrition in one of the studies, unlike some past research. This highlights that work-life balance and income may matter more for retention than education within certain contexts.

The implications for organizations are clear. To curb attrition, prioritizing initiatives that improve work-life balance seems most effective. Flexible work arrangements like telecommuting, compressed workweeks, and flexible hours can help integrate employees' personal and professional lives while lowering stress. Giving workers more autonomy over when and how they work may also boost work-life balance.

While competitive pay remains important, focusing only on raises without addressing work-life balance may be insufficient for retention. Similarly, education-based strategies seem less impactful.

The study has limitations like examining a single company and lacking longitudinal designs. However, practical recommendations emerge. Enhancing work-life balance through flexible scheduling and supportive culture can likely reduce attrition by improving employee well-being and satisfaction.

Companies aiming to minimize turnover should prioritize strategies focused on the most influential factor found: work-life balance. Further research across industries could solidify best retention practices.

In summary, the study emphasizes the crucial role of work-life balance in reducing attrition. It highlights the need for organizations to optimize work-life integration through flexible arrangements and a culture that values employee wellness in order to retain talent. Salary increases alone seem insufficient without addressing work-life balance issues.

In conclusion, organizations seeking to curb attrition should prioritize initiatives aimed at improving employees' work-life balance. The adoption of flexible work arrangements, the creation of a supportive culture that prioritizes worker wellness, and providing opportunities for work-life integration appear most promising for enhancing human capital through higher job satisfaction and lower turnover. However, further longitudinal, multi-company research across industries is needed to validate these findings and elucidate best practices for boosting retention.

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