

# Analysis of Loss Ratio and Determinants of High Health Insurance Claims in Employee Benefit Programs: A Case Study of PT XYZ for the 2024–2025 Period

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The rising global healthcare costs have placed significant pressure on the sustainability of employer-sponsored health insurance programs. This study aims to analyze the loss ratio and identify the main determinants of high health insurance claims in the employee benefit program of PT XYZ for the 2024–2025 period. The research employed an analytical observational design using secondary claims data from 2024–2025. The analysis was conducted descriptively and inferentially by calculating the loss ratio, examining the frequency distribution of claims, determining the average cost per case, and performing comparative analysis based on type of service and membership status. The results show a loss ratio of 115.37%, indicating an underwriting deficit. Outpatient services dominated claim frequency ( $\pm 78\%$ ), while inpatient services contributed the highest cost per episode. Dependent participants accounted for more than two-thirds of total claims. The primary determinants of increasing claims include the high frequency of outpatient visits, the high cost of inpatient care, and the utilization pattern among dependents. These findings highlight the importance of benefit design evaluation, utilization control strategies, and strengthening promotive and preventive programs to maintain the financial sustainability of the program.

**Keywords:** Loss Ratio; Health Insurance Claims; Employee Health Benefits; Healthcare Cost Determinants

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## 1. Introduction

Employee benefit-based health insurance programs constitute a critical component of contemporary human resource management[1][2], as they function not only as a mechanism for protecting employees against financial risks arising from healthcare needs but also as a strategic instrument for enhancing workforce welfare and organizational productivity[3][4]. In modern corporations, the provision of health insurance as part of employee benefit packages has become a widely adopted practice, reflecting growing recognition of health security as a determinant of employee well-being, job satisfaction, and retention[5][6]. However, the sustainability of such programs is increasingly challenged by the rapid escalation of healthcare costs observed globally over the past decade[7]. Rising medical service tariffs, advancements in medical technology, increasing prevalence of non-communicable diseases, and shifts in healthcare utilization patterns have collectively intensified financial pressure on employer-sponsored health financing schemes[8].

In the context of corporate health insurance, the financial sustainability of benefit programs is fundamentally determined by the balance between premium contributions and claim expenditures[9]. This balance is commonly evaluated using the loss ratio, defined as the proportion of total claims paid to total premiums received within a specific period. From an insurance management perspective, an optimal loss ratio should

remain below one hundred percent, as claim expenditures that exceed premium income indicate underwriting deficits and signal potential financial instability of the program[10]. Persistent loss ratios above this threshold may compel insurers or employers to adjust premiums, redesign benefit structures, or impose utilization controls, which in turn can affect employee satisfaction and access to healthcare services. Consequently, monitoring and managing the loss ratio is not merely an actuarial exercise but a strategic concern for corporate governance and human resource policy.

Empirical evidence suggests that high claim ratios in employer-sponsored health insurance schemes are driven by a combination of participant characteristics and healthcare utilization patterns[11]. Previous studies have documented that demographic factors such as age structure, family coverage, and dependency ratios significantly influence claim levels, as dependent beneficiaries often exhibit higher utilization rates and cost per episode compared to principal members[12]. In addition, service utilization patterns, particularly the frequency of outpatient visits and the cost intensity of inpatient care, play a decisive role in shaping overall claim burdens[13]. The expansion of provider networks, variations in benefit design, and limited cost-sharing mechanisms may further amplify moral hazard behavior, thereby increasing the frequency of healthcare utilization without necessarily improving health outcomes[14].

Within this broader context, the case of PT XYZ during the 2024–2025 period illustrates the financial pressures faced by corporate health insurance programs. The company's employee benefit health insurance scheme recorded a loss ratio exceeding one hundred percent, indicating that total claim payments surpassed premium contributions within the observed period. Preliminary claim profiles reveal that outpatient services accounted for the majority of claim frequency, while inpatient services contributed disproportionately to total claim expenditures. Moreover, claims among dependent participants constituted a substantial share of total costs, suggesting that family coverage structures may exert additional pressure on program sustainability. These patterns reflect a complex interaction between benefit design, utilization behavior, and participant risk profiles, which warrants systematic empirical investigation.

Despite the growing relevance of loss ratio management in corporate health insurance schemes, empirical studies in the Indonesian context remain relatively limited, particularly those employing firm-level claims data to identify specific cost drivers and utilization patterns within employee benefit programs. Existing literature has predominantly focused on national health insurance systems or macro-level health financing issues, leaving a gap in understanding the micro-level dynamics of employer-sponsored insurance sustainability. This study seeks to address this gap by providing an in-depth analysis of loss ratio performance and the determinants of high claim levels in a corporate employee benefit program.

Accordingly, this study aims to analyze the loss ratio of PT XYZ's employee health insurance program during the 2024–2025 period and to identify the key determinants of high claim expenditures, focusing on participant characteristics and patterns of healthcare utilization. Methodologically, the study employs an analytical observational design using secondary claims data, with descriptive and comparative analyses to examine claim distribution by type of service and membership status. By integrating financial performance indicators with utilization profiles, this research contributes to the empirical literature on corporate health insurance sustainability and offers practical insights for corporate managers and insurers in designing more effective risk management strategies, benefit structures, and utilization control mechanisms to ensure the long-term financial viability of employee health benefit programs.

## 2. Literature Review and Problem Statement

### Health Insurance in Employee Benefit Schemes

Employee benefit-based health insurance has been widely recognized as an integral component of organizational welfare systems and human resource management strategies. The provision of health coverage by employers aims to protect employees from financial risks associated with healthcare utilization while simultaneously enhancing job satisfaction, organizational commitment, and workforce productivity. From a corporate governance perspective, employee health benefits are not merely a social obligation but also a strategic investment in human capital, as healthier employees tend to exhibit higher work engagement and lower absenteeism.

However, the sustainability of employer-sponsored health insurance schemes is increasingly challenged by rising healthcare expenditures, driven by medical price inflation, technological advancements in healthcare delivery, demographic transitions, and epidemiological shifts toward chronic and lifestyle-related diseases. Smith and Witter[14] emphasize that without adequate cost-containment mechanisms and benefit design optimization, corporate health financing schemes are vulnerable to escalating claim burdens that may exceed premium revenues. This condition necessitates systematic monitoring of financial performance indicators to ensure the long-term viability of employee benefit programs.

### Loss Ratio as a Performance Indicator in Health Insurance

The loss ratio is a fundamental indicator in insurance performance assessment, reflecting the proportion of claim payments relative to premium income within a defined period. Cummins and Weiss[10] argue that the loss ratio serves as a proxy for underwriting performance and risk adequacy, as excessively high ratios signal financial stress and potential underwriting deficits. In the context of health insurance, loss ratios above one hundred percent indicate that claim expenditures surpass premium contributions, thereby undermining the financial sustainability of insurance schemes.

Empirical studies on health insurance markets suggest that optimal loss ratio thresholds vary depending on administrative cost structures, regulatory frameworks, and risk margins embedded in premium calculations. Nonetheless, persistent loss ratios exceeding sustainable thresholds compel insurers and employers to implement corrective measures, including premium adjustments, benefit redesign, utilization management, and the introduction of cost-sharing mechanisms. Consequently, the loss ratio not only reflects financial outcomes but also embodies the interaction between benefit design, participant behavior, and provider practices.

### Determinants of High Health Insurance Claims

The literature identifies multiple determinants of high health insurance claims, which can be broadly categorized into participant-related factors, utilization patterns, and structural features of health insurance schemes. García-Gómez et al[12] highlight that demographic characteristics, such as age composition, family coverage, and dependency status, significantly influence healthcare utilization and claim volumes. Dependent beneficiaries often exhibit higher utilization rates due to heterogeneous health risk profiles and varying healthcare-seeking behaviors within family units.

In addition to participant characteristics, utilization patterns across different types of healthcare services constitute a critical determinant of claim levels. Outpatient services typically account for high claim frequency, driven by relatively low per-visit costs and ease of access, whereas inpatient services, despite lower utilization frequency, contribute disproportionately to total claim expenditures due to higher per-episode costs. Lal et al[15] further emphasize that benefit design features, such as the absence of

gatekeeping systems, limited cost-sharing, and broad provider networks, may intensify moral hazard behavior, thereby increasing healthcare utilization beyond clinically necessary levels.

Structural and systemic factors also play a role in shaping claim dynamics. Changes in disease epidemiology, particularly the increasing prevalence of non-communicable diseases among working-age populations, have contributed to rising healthcare costs globally[16]. These trends underscore the necessity for employers and insurers to adopt proactive risk management strategies that integrate preventive health interventions with financial control mechanisms.

### **Research Gap**

Despite the extensive body of literature on health insurance financing and utilization, empirical studies focusing on loss ratio performance and claim determinants within corporate employee benefit schemes, particularly in developing country contexts, remain limited. Most existing research has concentrated on national health insurance systems or macro-level health financing structures, with relatively little attention paid to firm-level insurance program sustainability. Furthermore, prior studies often analyze healthcare utilization patterns without explicitly linking them to financial performance indicators such as the loss ratio.

In the Indonesian context, empirical evidence on the interaction between loss ratio dynamics, service utilization patterns, and membership status within corporate health insurance programs is scarce. This gap constrains the ability of corporate decision-makers to design evidence-based interventions tailored to the specific cost drivers and utilization behaviors within their employee populations. Accordingly, there is a need for micro-level analyses that integrate financial performance metrics with detailed claims utilization profiles to inform more effective corporate health benefit management.

### **Problem Statement and Research Objectives**

Building upon the preceding literature and identified research gap, this study addresses the problem of financial sustainability in corporate employee benefit health insurance programs, as reflected in elevated loss ratios. Specifically, the case of PT XYZ during the 2024–2025 period demonstrates a loss ratio exceeding sustainable thresholds, raising concerns regarding the long-term viability of the company's health insurance scheme. The central problem addressed in this study is the lack of empirical clarity regarding the key determinants of high claim expenditures that contribute to unfavorable loss ratio performance in corporate health insurance programs.

Accordingly, this study seeks to address the following research questions:

1. How does the loss ratio of PT XYZ's employee benefit health insurance program reflect the financial sustainability of the scheme during the 2024–2025 period?
2. What are the dominant patterns of healthcare utilization, in terms of service type and membership status, that contribute to high claim expenditures?
3. Which participant and utilization-related factors constitute the primary determinants of elevated health insurance claims within the employee benefit program?

By addressing these questions, this study aims to provide empirical evidence that bridges the gap between health insurance financial performance analysis and utilization-based determinants of claims, thereby contributing to the literature on corporate health insurance sustainability and offering practical guidance for benefit design and risk management in employer-sponsored health insurance schemes.

### 3. Method

#### Research Design

This study employed an analytical observational research design with a retrospective cross-sectional approach, utilizing secondary data derived from health insurance claims records of PT XYZ's employee benefit program for the 2024–2025 period. The retrospective design was selected to enable systematic examination of claim patterns and financial performance indicators based on realized claims and premium data within the specified period. This design is appropriate for assessing loss ratio performance and identifying utilization-based determinants of claim expenditures in corporate health insurance schemes.

#### Data Source and Study Population

The data used in this study were obtained from the administrative claims database of PT XYZ's employee health insurance program for the 2024–2025 coverage period. The study population comprised all registered beneficiaries under the employee benefit scheme during the observation period, including both principal members (employees) and dependent members (family beneficiaries). The unit of analysis was individual claim episodes, encompassing outpatient, inpatient, and dental care services. Claims with incomplete financial information were excluded from the analysis to ensure data consistency and reliability.

#### Variables and Operational Definitions

The key variables analyzed in this study were categorized into financial performance indicators, utilization characteristics, and participant attributes:

1. Loss Ratio (dependent financial indicator): Calculated as the ratio of total claims paid to total premiums received within the 2024–2025 period, expressed as a percentage.
2. Type of Healthcare Service: Classified into outpatient care, inpatient care, and dental care.
3. Membership Status: Categorized as principal (employee) and dependent (family member).
4. Claim Frequency: Measured as the number of claim episodes recorded for each service category.
5. Claim Cost per Episode: Defined as the average monetary value of claims per service episode.
6. Diagnosis Category: Grouped based on primary diagnosis codes recorded in claims data, and classified into acute and chronic conditions for descriptive analysis.

#### Data Analysis

Data analysis was conducted in several stages. First, descriptive statistical analysis was performed to summarize claim distributions by type of service, membership status, and diagnosis category, including frequency, proportion, and mean cost per episode. Second, the loss ratio was calculated to assess the financial performance of the employee benefit health insurance program during the study period.

Third, comparative analysis was employed to examine differences in average claim costs between principal and dependent beneficiaries. An independent samples t-test was utilized to test whether statistically significant differences existed between the two groups. The level of statistical significance was set at a five percent threshold.

Fourth, contribution analysis was conducted to identify the relative contribution of each service category and membership status to total claim expenditures. This approach enabled the identification of dominant cost drivers affecting the overall loss ratio performance. All statistical analyses were conducted using standard statistical software.

## Ethical Considerations

This study utilized anonymized secondary administrative data obtained from the company's insurance records. No personal identifiers were included in the dataset, and all analyses were conducted in compliance with data confidentiality and ethical standards for research involving secondary data. The use of aggregated claim data ensured that individual privacy was protected, and the findings were reported solely for academic and managerial evaluation purposes.

## 4. Results and Discussion

### Loss Ratio and Financial Sustainability of the Program

This subsection addresses the first research objective, namely to analyze the loss ratio of PT XYZ's employee benefit health insurance program during the 2024–2025 period as an indicator of financial sustainability.

**Table 1.** Loss Ratio Analysis of PT XYZ for the 2024–2025 Period

Premiums (IDR)	Total Claims (IDR)	Loss Ratio
4,500,000,000	5,191,650,000	115.37%

Source: PT XYZ, 2025

Based on Table 1, total premiums collected during the 2024–2025 period amounted to IDR 4,500,000,000, while total claim expenditures reached IDR 5,191,650,000. Using the standard loss ratio formula, total claims divided by total premiums multiplied by 100 percent, the resulting loss ratio was 115.37%.

This finding indicates that for every IDR 1 of premium revenue, approximately IDR 1.15 was expended on claims. In financial terms, the program experienced an underwriting deficit of 15.37% relative to total premium income. In the health insurance industry, sustainable loss ratios generally range between 70% and 90%, depending on administrative costs and risk margins. A ratio exceeding 100% reflects structural financial imbalance and signals potential long-term sustainability risks if no corrective measures are implemented.

### Distribution of Claims by Type of Healthcare Service

To address the second research question regarding dominant healthcare utilization patterns, claims were analyzed based on type of service.

**Table 2.** Distribution of Claims by Type of Healthcare Service

Type of Service	Claim Frequency (%)	Cost Contribution (%)
Outpatient Care	78	55
Inpatient Care	15	40
Dental Care	7	5

Source: PT XYZ, 2025

As presented in Table 2, outpatient care accounted for 78% of total claim frequency and contributed 55% of total claim costs. This indicates that outpatient services constitute the primary driver of claim volume. Although the cost per outpatient visit is relatively lower compared to inpatient care, the high frequency of utilization results in substantial cumulative financial impact.

In contrast, inpatient services represented only 15% of total claim frequency but contributed 40% of total claim expenditures. This pattern demonstrates cost intensity, where lower utilization frequency is offset by significantly higher per-episode costs. Dental services contributed marginally to overall costs and frequency.

These findings suggest that both frequency-driven outpatient utilization and cost-intensive inpatient episodes play critical roles in shaping overall claim expenditure and influencing the loss ratio.

### Distribution of Claims by Membership Status

To further examine utilization determinants, claims were analyzed according to membership status.

**Table 3.** Distribution of Claims by Membership Status

Membership Status	Claim Frequency (%)	Cost Contribution (%)	Average Claim Cost per Episode (IDR)
Principal	35	33	1,250,000
Dependent	65	67	1,890,000

Source: PT XYZ, 2025

Table 3 shows that dependent beneficiaries accounted for 65% of total claim frequency and 67% of total claim costs. In contrast, principal members contributed only 35% of claim frequency and 33% of total costs. Moreover, the average claim cost per episode for dependent members (IDR 1,890,000) exceeded that of principal members (IDR 1,250,000). This indicates not only higher utilization rates among dependents but also higher cost per episode.

The dominant contribution of dependents suggests that family coverage structures exert significant influence on overall program expenditure. This aligns with prior empirical findings that family beneficiaries often display heterogeneous risk profiles and higher healthcare utilization patterns compared to employees.

### Comparative Analysis of Claim Costs Between Principal and Dependent Members

To statistically test whether differences in claim costs between principal and dependent members were significant, an independent samples t-test was conducted. The results indicate:

1. Mean claim cost (Principal): IDR 1,250,000
2. Mean claim cost (Dependent): IDR 1,890,000
3. p-value: 0.03

At the 5% significance level, the p-value of 0.03 indicates a statistically significant difference between the two groups. Therefore, the null hypothesis of no difference in mean claim costs is rejected. This statistical evidence confirms that membership status constitutes a significant determinant of claim magnitude. The higher average claim cost among dependents may be attributed to age composition differences, household health risk variability, and broader healthcare-seeking behavior within family units. From a managerial perspective, this finding implies that undifferentiated premium structures may inadequately reflect risk exposure associated with family coverage, thereby contributing to elevated loss ratios.

### Determinants of High Claims and Implications for Financial Sustainability

Integrating the findings across service type and membership status, the primary determinants of elevated claim expenditures can be identified as follows:

1. High frequency of outpatient utilization
2. High cost intensity of inpatient episodes
3. Higher utilization and average claim cost among dependent beneficiaries

The elevated loss ratio of 115.37% reflects the cumulative interaction of these determinants. While outpatient services drive claim volume, inpatient services exert disproportionate financial pressure due to higher per-episode costs. Simultaneously, dependent members amplify total claim expenditure through both higher frequency and higher average cost per episode.

If these utilization patterns persist without policy intervention, the program is likely to face continued underwriting deficits. Potential corrective strategies include benefit redesign, introduction of cost-sharing mechanisms, strengthened gatekeeping systems, and expansion of promotive and preventive health programs aimed at reducing avoidable utilization.

Overall, the findings demonstrate that financial sustainability in employer-sponsored health insurance programs is not determined solely by premium levels, but by the interaction between utilization behavior, benefit design, and participant risk composition. A comprehensive risk management approach is therefore essential to maintain long-term program viability.

## 5. Conclusion

This study concludes that the employee benefit health insurance program of PT XYZ during the 2024–2025 period experienced an underwriting deficit, reflected in a loss ratio of 115.37%, indicating that total claims exceeded premium income. This condition signals financial pressure on the long-term sustainability of the program. The findings show that high claim expenditures were primarily driven by the dominant frequency of outpatient services and the high average cost per inpatient episode. Although outpatient visits involve lower per-visit costs, their high utilization frequency creates substantial cumulative financial burdens. In contrast, inpatient services, while less frequent, contribute disproportionately due to higher cost intensity. Membership status also emerged as a significant determinant. Dependent beneficiaries accounted for the majority of claim frequency and costs and exhibited significantly higher average claim costs compared to principal members. This suggests that family coverage structures, without adequate risk-based pricing or utilization controls, may intensify financial imbalances. Managerially, companies should consider strengthening utilization management, implementing selective cost-sharing mechanisms, and expanding preventive and wellness programs to reduce avoidable claims. Periodic actuarial review of premium structures may also enhance sustainability. This study is limited by its single-company scope, short observation period, and reliance on descriptive and comparative analysis. Future research should employ longitudinal data, multivariate modeling, and cross-company comparisons to better understand long-term loss ratio dynamics and claim determinants.

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