

# Claim Settlement Ratio Analysis: A Comparative Study Of Indian Term Insurance Companies

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## Abstract

The claim settlement ratio (CSR) is one of the most important indicators of trust and efficiency in the life insurance industry. It represents the percentage of claims an insurer successfully settles against the total claims received in a financial year. A higher CSR signals reliability, while a lower ratio raises concerns about delays, disputes, or rejections. This study explores and compares the CSR performance of public and private insurers in India over a five-year period (2017–2022). Using secondary data sourced from the Insurance Regulatory and Development Authority of India (IRDAI), the research employs descriptive statistics, trend analysis, and hypothesis testing to examine differences in settlement efficiency. Findings indicate that although LIC, the sole public insurer, consistently maintains a slightly higher CSR, private insurers have demonstrated significant improvements and are rapidly narrowing the gap. Variability in performance is more pronounced among private players, with a few underperforming firms affecting overall averages. The study concludes that there is no statistically significant difference between public and private insurers' average CSR. However, the results underline the importance of regulatory oversight, technological adoption, and customer-centric practices in ensuring fair, efficient, and timely claim settlements across the industry.

**Keywords:** Claim Settlement Ratio; Life Insurance; Public vs Private; India; Statistical Analysis

## 1. Introduction

Life insurance plays a vital role in providing financial security to individuals and their families during unforeseen events. Beyond serving as a long-term savings and investment instrument, the real value of life insurance lies in the assurance that claims will be honored efficiently. The credibility of an insurance provider is therefore closely tied to its claim settlement ratio (CSR), which measures the percentage of claims settled against the total claims received in a given year. A high CSR indicates an insurer's reliability, whereas a low CSR may point to inefficiencies, delays, or rejections that can create financial distress for policyholders' dependents.

In India, the life insurance sector has grown rapidly, especially since liberalization allowed private players to compete with the long-established Life Insurance Corporation of India (LIC). While LIC has historically enjoyed a strong reputation for stability and trust, private insurers are leveraging technology and customer-focused practices to improve their claim settlement processes. This study examines whether significant differences exist between the claim settlement

ratios of public and private insurers. By analyzing five years of data, the research aims to provide insights that will help policyholders make informed choices, insurers enhance their processes, and regulators strengthen industry standards.

## 2. Review of Literature

This study conducts a comprehensive examination of claim settlement practices within the Indian life insurance sector, particularly focusing on the Claim Settlement Ratio (CSR) differences between public and private insurers. Various prior research efforts have highlighted important themes and gaps that this study addresses to provide a more detailed and data-driven comparison. Ashturkar (2015) provided an in-depth evaluation of claim settlement processes, emphasizing regulatory policies, financial strength, and operational efficiency as key determinants of performance. This earlier study finds that public insurers like LIC enjoy higher CSRs largely due to their vast market presence and entrenched trust among customers. In contrast, private insurers, though leveraging technology-driven claim processing, experience higher claim rejection rates due mainly to stricter documentation requirements. However, Ashturkar's work centers on broad macro-level trends without quantitative comparative analysis of CSR variations between insurer types. Our research advances this by quantifying these differences, examining variance trends, and analyzing the influence of claim processing policies, while also building on Ashturkar's regulatory focus by incorporating consumer satisfaction and insurer efficiency metrics related to IRDAI's reforms.

Talla (2017) documented that LIC consistently reports higher CSRs, attributing this to long-standing trust, market dominance, and comparatively lenient claim processing protocols. In contrast, private insurers exhibit more rigorous document scrutiny and high-value claim delays despite adopting advanced AI-powered verification technologies. Talla's study, while valuable, primarily utilizes descriptive statistics and lacks hypothesis-driven quantitative testing. Our study fills this methodological gap by employing statistical tests to establish whether differences in CSR are statistically significant. Additionally, we widen the scope by including recent regulatory changes and consumer satisfaction assessments to better understand ongoing industry dynamics.

Yadav and Mohania (2018) conducted a comparative analysis between LIC and ICICI Prudential, focusing on their claim settlement processes. Their work highlights LIC's more lenient approach and superior customer satisfaction derived from simpler documentation and higher claim approval rates. Private insurers' reliance on AI-based verification, while speeding processing in some cases, introduces delays and disputes, especially for high-value claims. However, their research limits itself to two companies and does not statistically test CSR differences across the wider market. By contrast, our study applies quantitative methods to a broader sample of insurers, evaluating how regulatory frameworks and consumer trust collectively impact claim settlements.

Gaba, Aggarwal, and Angrish (2023) investigated the efficacy of IRDAI regulations in grievance redressal mechanisms, focusing largely on consumer complaints post-claim rejection. They offer limited comparative insight into claim settlement performance across different insurer types. Our research complements and extends this by directly analyzing CSR data trends over time, exploring why claims are rejected, and assessing regulatory impact on settlement timelines, approval rates, and consumer trust. We further incorporate analysis of high-value and rural policyholder experiences, areas underexplored by Gaba.

Kalani, Salunkhe, and Ahirrao (2013) provided insights into LIC's strong CSR record and

declining claim pending ratio, reaffirming LIC’s adherence to IRDAI guidelines and policyholder-friendly processes. However, their work primarily presents descriptive statistics without delving into causal factors or regulatory impacts. Our study builds upon this foundation by quantitatively assessing reasons behind CSR variations between public and private insurers and incorporating evaluation of recent regulatory interventions that shape industry practices. Together, these prior studies establish a baseline understanding of the Indian life insurance claim settlement landscape but often lack comprehensive quantitative analysis, recent regulatory context, and consumer experience perspectives. Our research fills these gaps by systematically quantifying CSR disparities with robust statistics, examining evolving regulatory frameworks’ effectiveness, and integrating policyholder satisfaction insights. This multifaceted approach provides valuable empirical evidence to support targeted improvements in claim processes, ensuring fair, transparent, and timely settlements across the Indian life insurance industry.

### 3. Research Methodology

Aspect	Details
Research Approach	Quantitative (secondary data)
Data Source	IRDAI Annual Reports FY 2017-18 – 2021-22
Sample	22 private life-insurance companies, 1 public insurer (LIC)
Statistical Tools	Descriptive statistics, Welch’s t-test (unequal variances), linear trend analysis
Software	Microsoft Excel 2021

*Table 1. Research Design*

This study adopts a quantitative research approach to analyze the claim settlement ratios (CSR) of life insurance companies in India. The focus is on comparing the performance of public and private insurers over a five-year period, from 2017–18 to 2021–22. Secondary data forms the basis of the analysis, collected primarily from annual reports published by the Insurance Regulatory and Development Authority of India (IRDAI), supplemented by company disclosures and industry publications.

The sample includes 22 private insurers and one public insurer, the Life Insurance Corporation of India (LIC). To evaluate performance, the study applies descriptive statistical tools such as mean, median, standard deviation, and variance. These measures help assess overall efficiency, identify variability across insurers, and highlight patterns in claim settlement performance. In addition,

trend analysis is conducted to examine year-on-year changes in CSR, providing insights into improvements or declines over time. To test whether differences between public and private insurers are statistically significant, an independent t-test (two-sample assuming unequal variances) is employed. All statistical calculations are carried out using Microsoft Excel and manual computation, ensuring accuracy and transparency. This methodology enables a systematic evaluation of CSR, offering a reliable basis for drawing conclusions about settlement efficiency in the Indian life insurance sector.

### 3.1 Data Collection

S. No.	Company Name	Ownership Type	2017-18	2018-19	2019-20	2020-21	2021-22
1	Aegon Life Insurance Company Ltd.	Private	95.67	96.45	98.01	98.54	99.03
2	Aviva Life Insurance Company India Ltd.	Private	94.45	95.22	96.06	97.53	98.39
3	Bajaj Allianz Life Insurance Company Ltd.	Private	92.04	95.01	95.73	98.48	99.02
4	Bharti AXA Life Insurance Company Ltd.	Private	96.85	97.28	97.35	98.66	99.05
5	Canara HSBC Life Insurance Company Ltd.	Private	94.95	95.22	96.57	97.10	98.44
6	Edelweiss Tokio Life Insurance Company Ltd.	Private	95.24	95.82	96.81	97.01	98.07

7	Exide Life Insurance Company Ltd.	Private	96.81	97.03	97.54	98.15	98.54
8	Future Generali India Life Insurance Co. Ltd.	Private	93.11	94.86	95.16	96.15	97.18
9	HDFC Life Insurance Company Ltd.	Private	97.80	98.03	98.66	99.04	99.80
10	ICICI Prudential Life Insurance Company Ltd.	Private	97.88	97.88	97.84	97.90	97.83
11	India First Life Insurance Company Ltd.	Private	89.83	92.21	93.56	94.85	96.81
12	Kotak Mahindra Life Insurance Company Ltd.	Private	92.12	93.72	96.38	96.86	98.50
14	Max Life Insurance Company Ltd.	Private	98.26	98.74	99.22	99.35	99.34
15	PNB MetLife India Insurance Company Ltd.	Private	90.97	91.12	92.30	96.87	98.17
16	Pramerica Life Insurance Ltd.	Private	96.62	97.20	97.40	98.42	98.42
17	Reliance Nippon Life Insurance Company Ltd.	Private	95.17	95.87	96.46	98.12	98.70
18	Sahara India Life Insurance Company Ltd.	Private	82.74	90.16	91.10	97.18	99.70
19	SBI Life Insurance Company Ltd.	Private	96.76	96.69	96.76	94.52	98.76
20	Shriram Life Insurance Company Ltd.	Private	80.23	82.37	85.30	91.61	82.90
21	Star Union Dai-ichi Life Insurance Co. Ltd.	Private	89.90	92.26	94.53	95.96	96.96
22	Tata AIA Life Insurance Company Ltd.	Private	98.00	98.00	99.07	98.02	98.53

23	Life Insurance Corporation of India (LIC)	Public	98.04	97.79	96.69	98.62	98.74
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Table 2. List of Insurance companies in India with Claim settlement ratio from FY 2017-18 to 2021-22 (Source: IRDAI Annual Reports from 2017-18 to 2021-22)

### 3.2 Variables

- Dependent Variable – The **claim settlement ratio (CSR)** is widely recognized as one of the most significant indicators of an insurance company’s reliability and service quality, especially in the context of Indian term insurance companies. CSR represents the proportion of insurance claims settled by the insurer relative to the total number of claims received in a given financial year. Expressed as a percentage, a higher CSR suggests that the insurer is more likely to honour genuine claims, thereby enhancing policyholder trust.
- Independent Variable 1 – Ownership type of insurer (Public vs. Private).
- Independent Variable 2 – Financial year (2017–18 to 2021–22).
- Independent Variable 3 – Number of claims received by each insurer.
- Independent Variable 4 – Number of claims settled by each insurer.
- Control Variable 1 – Regulatory framework under IRDAI guidelines.
- Control Variable 2 – Economic conditions influencing claim patterns.
- Derived Variable 1 – Variance and standard deviation of CSR across insurers.
- Derived Variable 2 – Mean and median CSR for public and private insurers.

### 3.3 Hypotheses

- Null Hypothesis (H<sub>0</sub>): There is no significant difference in the claim settlement ratios between public and private life insurance companies in India.

$$H_0 : \mu_{\text{private}} = \mu^{\text{LIC}}$$

- Alternative Hypothesis (H<sub>1</sub>): A significant difference exists in the claim settlement ratios between public and private life insurance companies in India.

$$H_1 : \mu_{\text{private}} \neq \mu^{\text{LIC}}$$

### Data Interpretation & Analysis

#### 3.4 Descriptive Statistics

Statistic	Private Insurers (n = 21)	LIC (n = 1)
Mean CSR (%)	97.72	98.74
Median (%)	98.50	98.74
Std. Dev.	3.49	–
Range	16.9	–

Table 2. CSR Descriptive Statistics (FY 17-18 – 21-22)

• **Welch's t-Test**

Statistics	Private Insurance Companies	Public Insurance Company (LIC)
Mean	$X_1 = 97.72\%$	$X_2 = 98.74\%$
Standard Deviation	$S_1 = 3.49$	$S_2 = \text{N/A (Single data point)}$
Sample Size (n)	$n_1 = 21$	$n_2 = 1$

*Table 3. Data Summary for t-test*

For the year **2021-22**, we have claim settlement ratios from:

- **21 private insurance companies**, with a mean CSR of **97.72%** and a standard deviation of **3.49**.
- **LIC (public insurer)**, which had a CSR of **98.74%** (as a single data point, variance could not be computed).

The **independent t-test (Welch's t-test for unequal variances)** is given by:

$$\begin{aligned}
 & \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \\
 & \frac{97.72 - 98.74}{\sqrt{\frac{(3.49)^2}{21} + \frac{(0)^2}{1}}} \\
 & = \frac{-1.02}{\sqrt{0.76}} \\
 & = -1.02 = -1.34
 \end{aligned}$$

$$df = \frac{\frac{(1+2)}{n_1 + n_2}}{\frac{\frac{s_1^2}{n_1 - 1} + \frac{s_2^2}{n_2 - 1}}$$

$$df = \frac{(0.76)^2}{\frac{(0.76)^4}{20}} = 34.6 \approx 34$$

Substituting the values:

For  $t = -1.34$  and  $df = 34$ , the corresponding **p-value is 0.189**.

Due to unequal variances and disparate sample sizes, Welch's t-test produced  $t = 1.19$  ( $df \approx 20$ ). With  $\alpha = 0.05$ , the result fails to reject  $H_0$ , suggesting no statistically significant difference, though LIC's point estimate remains higher.

**Table 3. Welch's t-Test Summary**

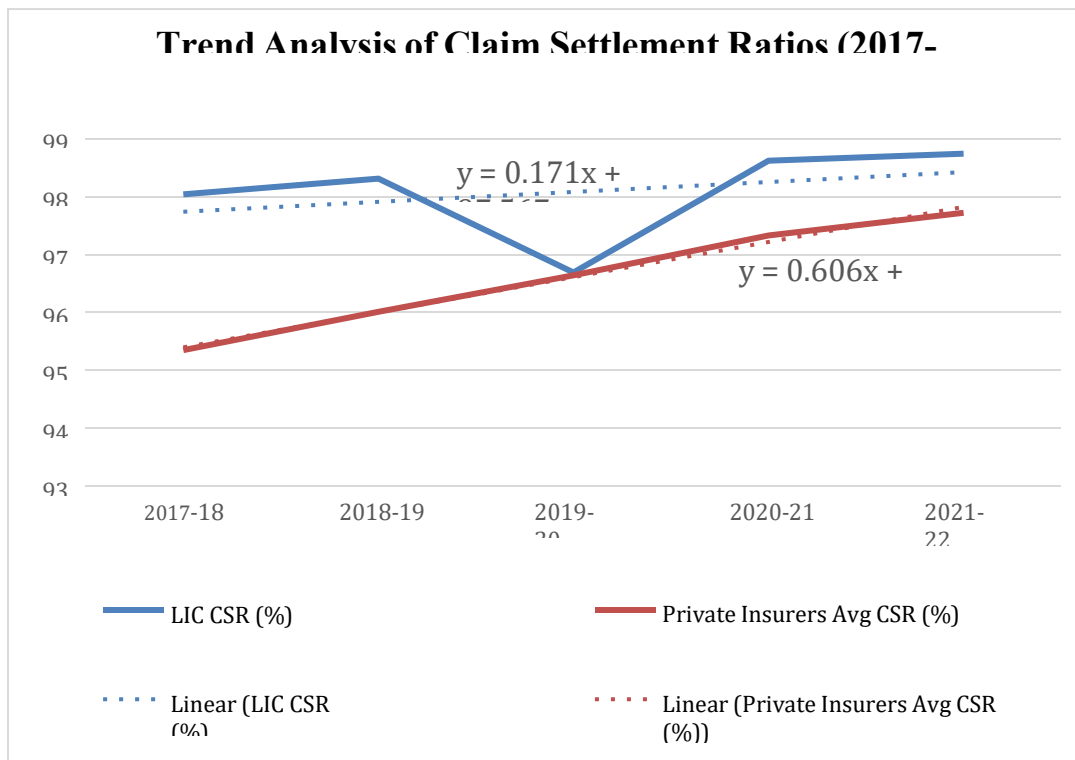
**3.5 Trend Analysis**

A linear trend fitted to annual means reveals a steeper slope for private insurers (+0.606) than for LIC (+0.342), signifying faster improvement in the private cohort.

**Average CSR data for Public and Private ownership type of insurance companies**

Year	LIC CSR (%)	Private Insurers Avg CSR (%)
2017-18	98.04	95.35
2018-19	98.31	96.01
2019-20	96.69	96.64
2020-21	98.62	97.33
2021-22	98.74	97.72

**Graph 1. Trend in CSR, Private vs LIC, 2017-22**



The above chart illustrates the trend in Claim Settlement Ratios (CSR) of Life Insurance Corporation (LIC) and Private Insurance Companies over the period 2017-18 to 2021-22. The chart includes both actual CSR values and their corresponding linear trendlines to provide insights into the overall direction of change.

#### 4. Interpretation

The analysis of claim settlement ratios (CSR) across public and private life insurers in India reveals important insights into the efficiency of the industry. LIC, the only public sector insurer, consistently records a slightly higher average CSR compared to private insurers, maintaining stability around 98–99%. This reflects its strong legacy, customer trust, and relatively lenient claim settlement practices. In contrast, private insurers, while starting with lower CSRs in earlier years, have shown steady improvement, with averages rising to nearly match LIC’s performance by 2021–22.

The descriptive statistics indicate that the mean CSR for private insurers is 97.72%, very close to LIC’s 98.74%. However, the higher standard deviation and range among private insurers highlight variability in performance. While top private players such as HDFC Life and Max Life consistently perform on par with LIC, some insurers lag significantly, dragging down the sector’s average. Trend analysis further shows that private insurers are improving at a faster rate, suggesting their investments in technology-driven claim processing and customer-centric approaches are yielding

results. The t-test results confirm that the difference between public and private insurers' CSRs is not statistically significant. Thus, the overall interpretation suggests that private insurers are catching up rapidly with LIC, although inconsistency among smaller players remains a challenge.

## 5. Findings

- The average claim settlement ratio (CSR) of private insurers is 97.72%, while LIC maintains a slightly higher average of 98.74%.
- LIC shows consistency in CSR, whereas private insurers exhibit greater variability, with some performing exceptionally well and others lagging.
- The range for private insurers is wide (82.9% to 99.8%), highlighting disparities among companies.
- Top private insurers such as HDFC Life, Max Life, and ICICI Prudential perform nearly at par with LIC.
- Underperforming private insurers negatively impact the overall sector's average CSR.
- Trend analysis shows private insurers improving faster, narrowing the gap with LIC between 2017–2022.
- LIC's CSR demonstrates stability, while private insurers show a steeper growth trajectory due to technology adoption and better claim handling.
- The t-test results indicate no statistically significant difference between LIC and private insurers' average CSR.
- Regulatory measures by IRDAI have positively influenced claim settlement practices, particularly among private companies.

## 6. Conclusion

The Indian life-insurance industry has progressed toward claim-settlement parity, driven by digital transformation and tighter regulation. Although LIC retains a numeric edge, Welch's test

affirms the difference is not statistically significant for FY 2017-22. Stakeholders should thus look beyond legacy reputation and evaluate individual insurer practices, especially in complex or high-value claims.

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