IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Socio-Economic And Legal Evaluation Of Unorganised Contract Labour In Onboard Passenger Services: Evidence From The Northeast Frontier Railway.

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Abstract

The growing reliance of Indian Railways on outsourced service providers for onboard passenger amenities has resulted in the large-scale engagement of unorganised contract workers. This study analyses the socio-economic status, employment conditions, wage mechanisms, working hours, and compliance with labour legislation of unorganised contract workers deployed on Mail and Express trains operating along the Kokrajhar–Lumding route under the Northeast Frontier Railway. A total of fifty workers were studied, comprising Food Supply Bearers (including Pantry Car workers) and Linen Supply Workers responsible for coach linen services. Primary data were collected through structured interviews and direct field observation, focusing on income patterns, job security, exploitative practices, and the extent of institutional monitoring. Statistical tools such as percentage analysis, chi-square tests, point-biserial correlation, and one-sample t-tests reveal widespread exploitation across both occupational categories. The findings point to inadequate social security coverage, irregular wage systems, excessive duty hours, and weak enforcement of labour regulations. The study highlights the urgent need for strengthened labour governance and institutional accountability within outsourced railway services.

Keywords: Unorganised workers, Contract labour, Food Supply Bearers, Linen Supply Workers, Indian Railways, Labour law compliance, Socio-economic vulnerability.

1. Introduction :

India's unorganised sector accounts for a substantial share of national employment, yet workers within this segment remain largely excluded from effective legal protection and social security mechanisms. In recent years, Indian Railways has increasingly outsourced non-core passenger services such as catering and linen management to private contractors. While this model aims to enhance operational efficiency, it has simultaneously transferred employment risks to contract labourers. Workers engaged as Food Supply Bearers and Linen Supply Workers perform essential passenger-oriented functions but typically operate under informal and insecure employment arrangements. They are frequently deprived of statutory benefits including Employees' Provident Fund (EPF), Employees' State Insurance (ESI), paid leave, and minimum wage guarantees. This study investigates the socio-economic conditions of these workers, examines their wage and working-hour structures, and evaluates compliance with prevailing labour laws, with an emphasis on systemic and institutional shortcomings rather than isolated individual violations.

2. Review of Literature:

Existing scholarship on unorganised and contract labour within public sector outsourcing consistently highlights multiple forms of vulnerability. Key issues documented include unstable and informal wage payments, prolonged working hours without overtime compensation, weak enforcement of labour legislation, and limited access to welfare schemes. Studies further observe that administrative fragmentation and inadequate regulatory oversight deepen the marginalisation of unorganised workers, restricting their ability to claim statutory entitlements. Despite this growing body of literature, empirical research focusing specifically on onboard railway service workers—particularly within the Northeast Frontier Railway zone—remains sparse. The present study addresses this gap by integrating field-based evidence with statistical and legal analysis.

3. Objectives of the Study :

The study seeks to:

1. Examine the socio-economic characteristics of Food Supply Bearers and Linen Supply Workers.
2. Analyse wage structures, income stability, and working hours.
3. Identify prevalent forms of labour exploitation.
4. Assess the level of compliance with statutory labour provisions.
5. Evaluate institutional oversight mechanisms at a systemic level.
6. Propose policy measures to strengthen labour protection.

4. Hypotheses :

4.1. Worker Distribution :

- **Null Hypothesis (H_0):** There is no significant difference in the distribution of workers across occupational categories.
- **Alternative Hypothesis (H_1):** A significant difference exists in the distribution of workers across categories.

4.2. Income Stability and Income Level :

- **H_0:** There is no association between income stability and average monthly income ($r_pb = 0$).
- **H_1:** A significant association exists between income stability and average monthly income ($r_pb \neq 0$).

4.3. Working Hours :

- **H_0:** Average duty hours per round trip do not exceed the legally prescribed limit of 24 hours.
- **H_1:** Average duty hours per round trip exceed the legal limit without overtime compensation.

4.4. Exploitation Patterns :

- **H_0:** There is no significant difference between Food Supply Bearers and Linen Supply Workers in reported exploitation types.
- **H_1:** A significant difference exists in exploitation patterns between the two groups.

5. Research Methodology:

The study is based on a sample of fifty unorganised workers employed on ten Mail and Express trains operating along the Kokrajhar–Lumding section. The sample includes 30 Food Supply Bearers and 20 Linen Supply Workers. Primary data were collected through structured interviews and on-site observation, supplemented by secondary sources such as labour laws and Indian Railway Catering and Tourism Corporation (IRCTC) regulations. Data analysis involved descriptive statistics, chi-square tests, correlation analysis, and t-tests using Excel and SPSS.

6. Socio-Economic Profile of Workers:

The majority of workers (68%) fall within the 26–45 age group. Educational attainment is low, with 58% having studied below the secondary level. Interstate migration characterises 64% of the workforce, and the average number of dependents per worker is four. These factors collectively limit bargaining power and heighten vulnerability to exploitation.

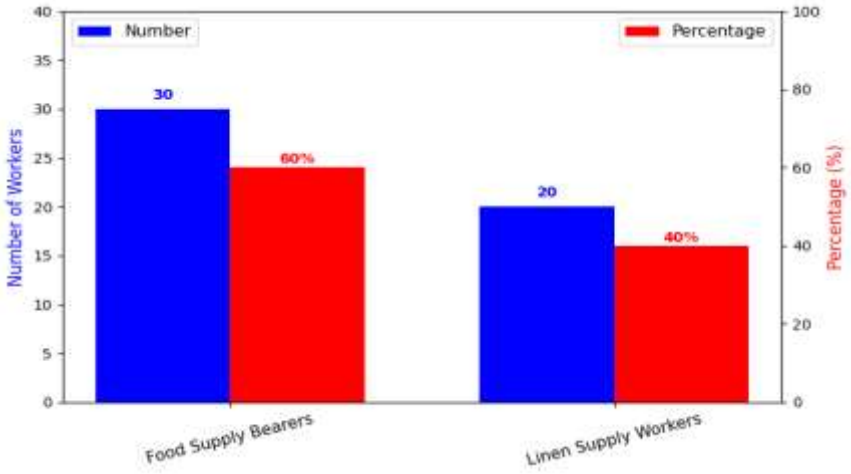
7. Worker Classification and Distribution:

Food Supply Bearers constitute 60% of the workforce, while Linen Supply Workers account for the remaining 40%. Both groups perform passenger-facing duties under informal contractual arrangements, reflecting the outsourced nature of onboard services.

Table 1: Worker Categories.

Category	Number	Percentage
Food Supply Bearers	30	60%
Linen Supply Workers	20	40%
Total	50	100%

Source : Primary Data Sources (2023)



Bar Chart 1: Worker Categories.

Interpretation: Food Supply Bearers constitute the majority. Both categories perform passenger-facing duties under informal contracts.

8. Wage Structure and Working Hours :

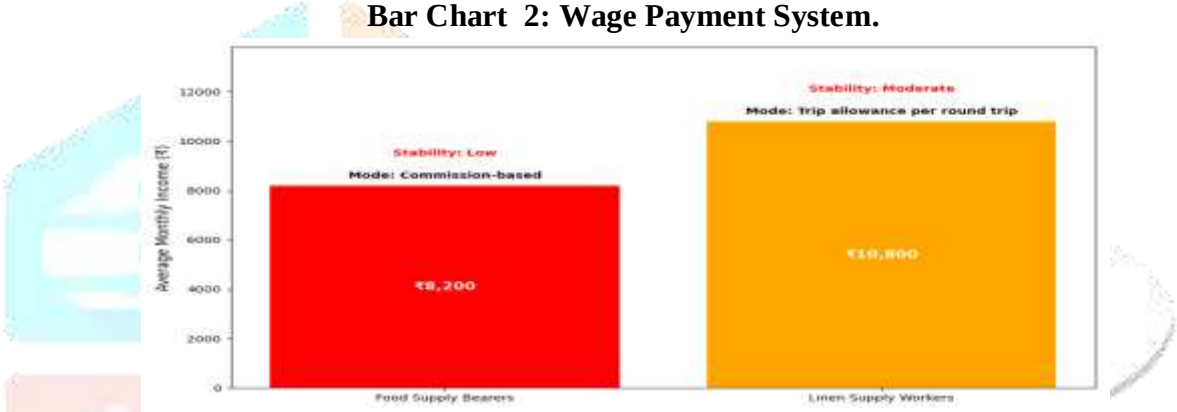
Food Supply Bearers are primarily remunerated through commission-based systems, resulting in high income volatility and an average monthly earning of ₹8,200. Linen Supply Workers receive trip-based allowances, yielding relatively more stable income averaging ₹10,800 per month. Despite this difference, earnings in both categories fall below acceptable living wage standards. Average duty hours per round trip range between 34–42 hours for Food Supply Bearers and 36–48 hours for Linen Supply Workers, substantially exceeding the legal norm of 24 hours. No overtime compensation is provided, constituting a clear violation of labour standards.

Table 2: Wage Payment System.

Category	Mode of Payment	Average Monthly Income (₹)	Income Stability
Food Supply Bearers	Commission-based	8,200	Low
Linen Supply Workers	Trip allowance per round trip	10,800	Moderate

Source : Primary Data Sources (2023).

Bar Chart 2: Wage Payment System.



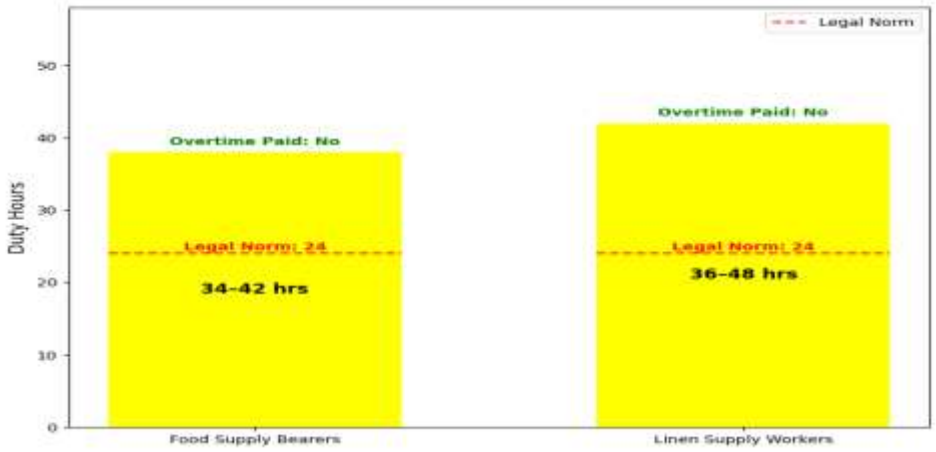
Interpretation: Food Supply Bearers experience high income volatility due to commission-based remuneration, while Linen Supply Workers receive relatively predictable income through trip-based allowances, though both remain below living wage standards.

Table 3: Average Working Hours per Round Trip.

Category	Avg. Duty Hours	Legal Norm*	Overtime Paid
Food Supply Bearers	34–42	24	No
Linen Supply Workers	36–48	24	No

Source : Primary Data Sources (2023).

Bar Chart 3: Average Working Hours per Round Trip.



Interpretation: Both worker categories surpass the legally prescribed working hours. The legal norm denotes the maximum permissible hours for adult employees under Indian labour legislation, including the Factories Act, 1948, the Occupational Safety, Health and Working Conditions Code, 2020, and the applicable State Shops and Establishments Acts, which typically restrict daily work to 9 hours **and weekly work to** 48 hours**, with any excess qualifying for overtime. Moreover, the** commission-based payment structure **renders Food Supply Bearers particularly susceptible to financial instability.**

9. Exploitation Patterns:

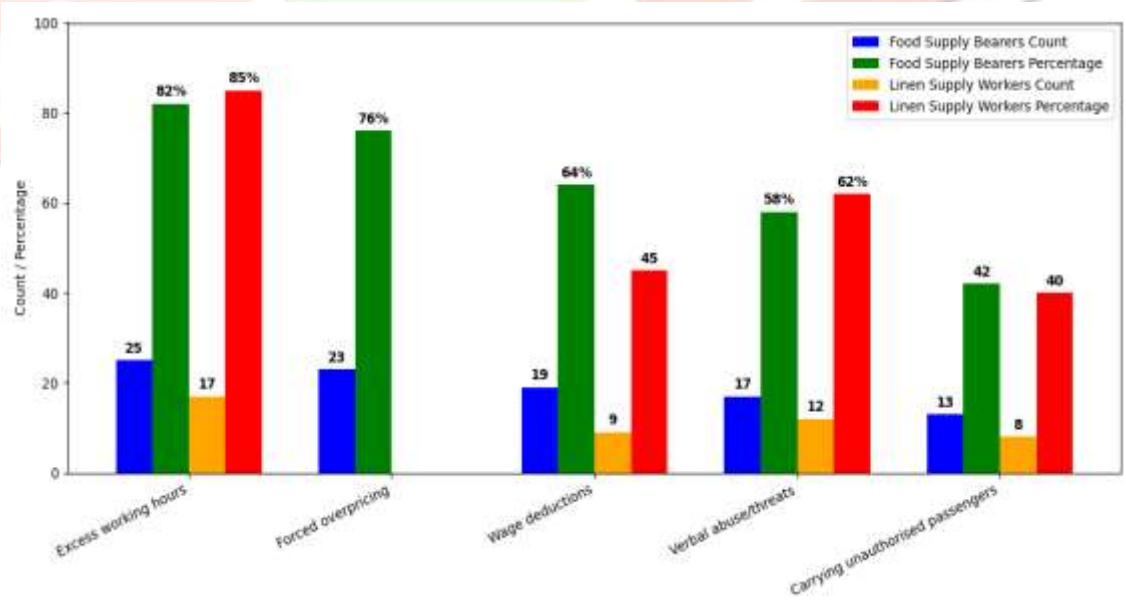
Both occupational groups report widespread exploitative practices. Excessive working hours, wage deductions, verbal abuse, and coercive operational demands are common across categories. Forced overpricing of food items emerges as a practice reported exclusively by Food Supply Bearers, indicating occupation-specific exploitation dynamics.

Table 4: Exploitative Practices (Count & Percentage)

Exploitation Type	Food Supply Bearers		Linen Supply Workers	
	Reporting Issues		Reporting Issues	
	Count	Parentage	Count	Parentage
Excess working hours	25	82%	17	85%
Forced overpricing	23	76%	NA	NA
Wage deductions	19	64%	9	45%
Verbal abuse/threats	17	58%	12	62%
Carrying unauthorised passengers	13	42%	8	40%

Source : Primary Data Sources (2023).

Bar Chart 4: Exploitative Practices (Count & Percentage)



Interpretation: Both categories experience high exploitation, with Linen Supply Workers slightly more affected due to continuous passenger interaction.

10. Statistical Analysis :

Chi-square analysis indicates no significant deviation from equal worker distribution across categories. However, a strong descriptive association is observed between income stability and average monthly income. The chi-square test confirms a significant relationship between worker category and income stability, with Food Supply Bearers predominantly experiencing low stability. One-sample t-tests reveal that average working hours significantly exceed statutory limits for both categories ($p < 0.0001$).

Further chi-square analysis demonstrates a statistically significant association between worker category and type of exploitation experienced.

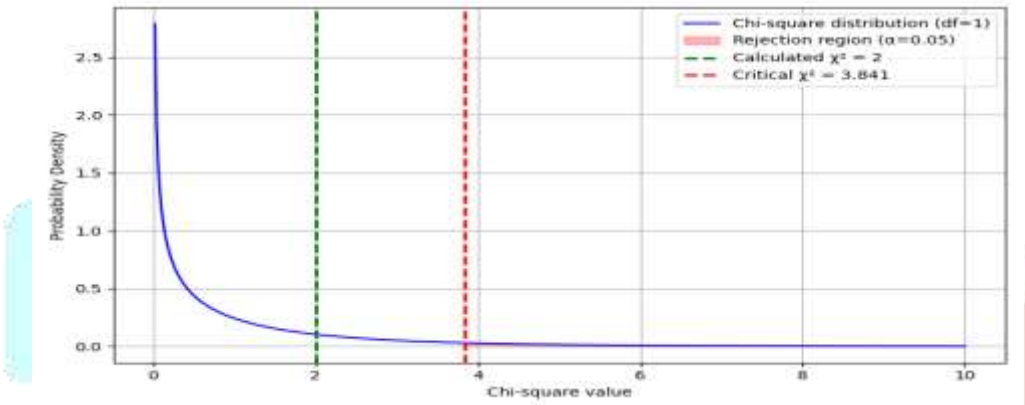
1. Chi-Square Test on Worker Classification and Distribution:

Observed and Expected frequencies

Category	Observed (O)	Expected (E)	$\chi 2=\sum O - E)^{\wedge 2}/E$
Food Supply Bearers	30	25	1
Linen Supply Workers	20	25	1
Sum of $\chi 2$			2

At a 5 per cent level of significance ($\alpha = 0.05$) with one degree of freedom (df = 1), the tabulated chi-square value is 3.841. Since the calculated chi-square value (2) is lower than the critical value (3.841), the null hypothesis cannot be rejected. Hence, the results indicate that the observed distribution does not differ significantly from an equal distribution.

Chi-Square Curve on Worker Classification and Distribution.



2. Point-biserial correlation test on Income Stability by Worker Category :

Income Stability coding:

a) Low = 0
b) Moderate = 1

Category	Income (₹) (X)	Stability (Y)
Food Supply Bearers	8,200	0
Linen Supply Workers	10,800	1

Calculation of Point-Biserial Correlation:

Mean of X ($\bar{X}$) = 9500

Standard deviation of income :

$$s = \sqrt{\frac{\sum(X - \bar{X})^2}{n - 1}}$$

SD_X = 1838.48

Mean income (Moderate stability = M_0) = 10,800 ; and

Mean income (Low stability = M_1) = 8,200

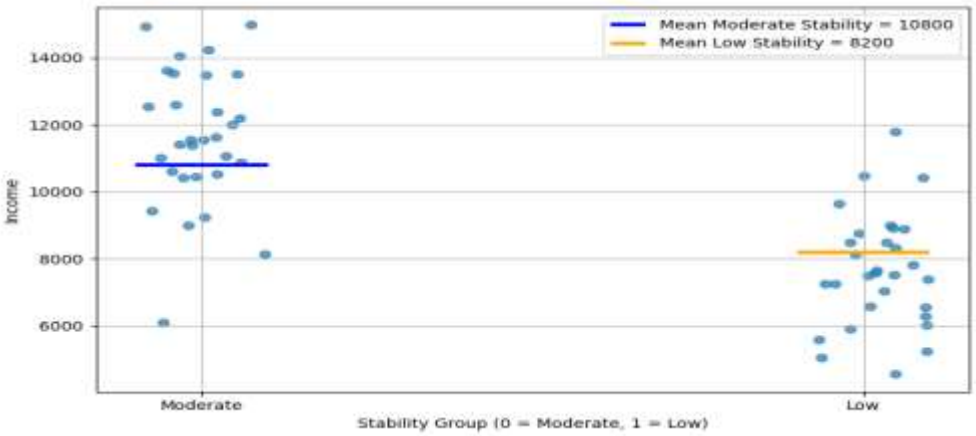
$(M_1 - M_0) = (10800 - 8200) = 2600$

Proportions: p=0.5, q=0.5

$r_{pb} = ((M_1 - M_0)/ SD_X) \times \sqrt{pq} = 0.707$

The relationship between income stability and average monthly income was examined using point-biserial correlation analysis. The computed point-biserial correlation coefficient ($r_pb = 0.707$) indicates a strong positive association, suggesting that workers classified under moderate income stability earn higher average monthly income compared to those with low stability. However, as the analysis is based on aggregated category-level data comprising only two observations, the result remains descriptive in nature and does not permit inferential testing. Accordingly, the null hypothesis cannot be statistically rejected, nor can the alternative hypothesis be conclusively established. Despite this limitation, the findings offer indicative evidence of a positive linkage between income stability and average monthly income.

Grouped Scatter Plot Of Point-Biserial Correlation on Income Stability by Worker



2.1. Chi-square Test of Association: Income Stability by Worker Category :

The association between Income Stability and Worker Category was examined using a Chi-square test. The data included 30 Food Supply Bearers, mostly exhibiting low income stability, and 20 Linen Supply Workers, mostly exhibiting moderate income stability.

Observed counts (O)

Category	Low Stability (1)	Moderate Stability (2)	Row Total
Food Supply Bearers	30	0	30
Linen Supply Workers	0	20	20
Column Total	30	20	50

Observed vs Expected Frequencies

Category	**Low Stability (1)**	**Moderate Stability (2)**
Food Supply Bearers	30 / 18	0 / 12
Linen Supply Workers	0 / 12	20 / 8

The contribution of each cell to the chi-square statistic was calculated using the formula of $(O-E)^2/E$

i) Food Supply × Low Stability = 8 ;

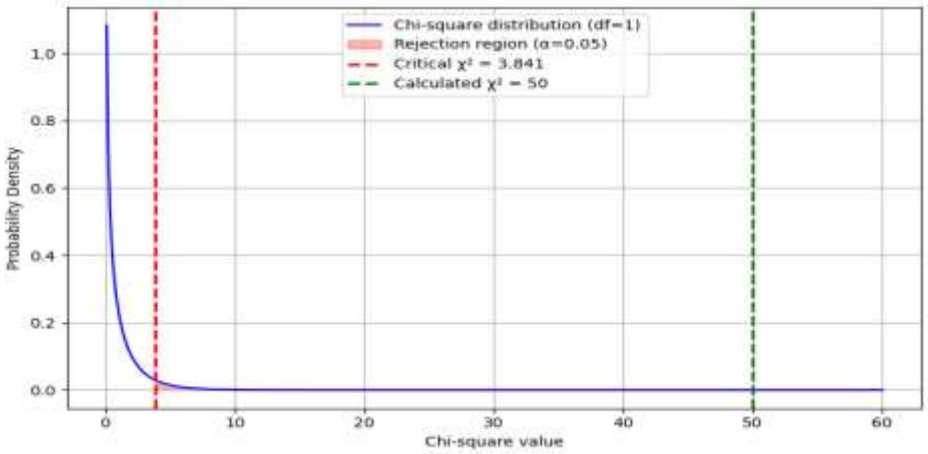
ii) Food Supply × Moderate Stability = 12;

iii) Linen Supply × Low Stability = 12 ; and

iv) Linen Supply × Moderate Stability = 18.

The sum of these contributions gives a chi-square statistic $\chi^2 = 50$. For degrees of freedom df = 1, the critical value at $\alpha = 0.05$ is 3.841. Since $\chi^2 = 50 > 3.841$, the null hypothesis is rejected, indicating a significant association between Worker Category and Income Stability. This confirms that Food Supply Bearers predominantly **have** low income stability, while Linen Supply Workers predominantly have moderate income stability**.**

Chi-Square Curve on Income Stability by Worker



3. t-test for Average Working Hours per Round Trip of the Unorganised Workers:

$t = (\bar{x} - \mu_0) / (s / \sqrt{n})$; where:

$\bar{x}$ = average duty hours;

μ_0 = legal norm = 24 hours ;

s = standard deviation ;

n = number of workers ; and

$s / \sqrt{n}$ = standard error.

Calculation of $\bar{x}$ (= average duty hours) :

(a) Food Supply Bearers: 38 hours ; and

(b) Linen Supply Workers: 42 hours.

Calculation of s (= standard deviation) :

(a) Food Supply Bearers: $s \approx (42-34)/4 = 2$; and

(b) Linen Supply Workers: $s \approx (48-36)/4 = 3$

Calculation of $s / \sqrt{n}$ (= standard error) :

(a) Food Supply Bearers: SE ≈ 0.365; and

(b) Linen Supply Workers: SE ≈ 0.671

Calculation of t-value:

(a) Food Supply Bearers: (≈38.36) ; and

(b) Linen Supply Workers: (≈26.82)

Calculation of p-value:

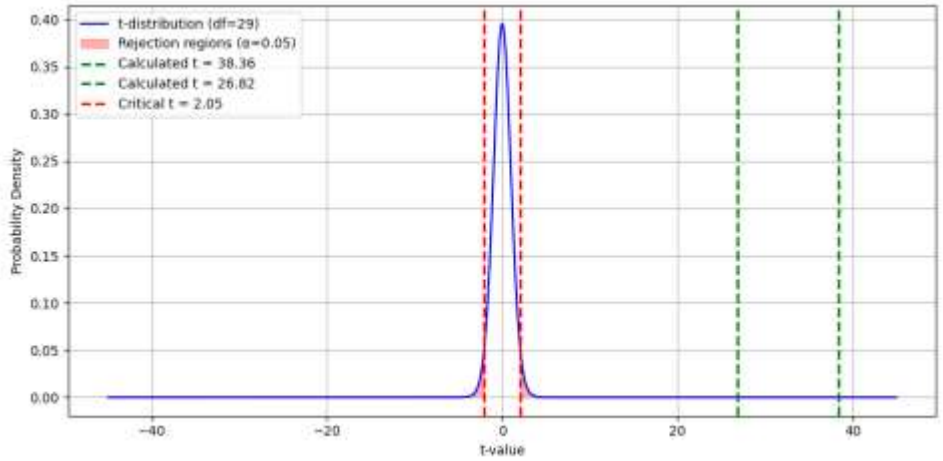
This study employs a one-tailed t-test (H_1: $\mu_0 > 24$) using the t-distribution. The **degrees of freedom (df)** are calculated as (n−1) ; for the Food Supply Bearers, df = (30−1) = 29 , and for the Linen Supply Workers, df =(20−1)=19 . The computed t-values for both groups are extremely large, resulting in p-values < 0.0001. This indicates that the probability of obtaining the observed sample means, assuming the true mean equals the legal norm of 24 hours, is virtually zero.

Test results considering overtime:

Worker Type	Avg. Hours	Legal Norm	Overtime Paid	t-value	p-value	Test Result
Food Supply Bearers	38	24	0	38.36	<0.0001	Reject H_0
Linen Supply Workers	42	24	0	26.82	<0.0001	Reject H_0

Interpretation of t-test Results: One-sample t-test results show that the average working hours of Food Supply Bearers (Mean = 38 hours) and Linen Supply Workers (Mean = 42 hours) significantly exceed the statutory limit of 24 hours per week (t = 38.36 and 26.82; p < 0.0001). The null hypothesis is therefore rejected for both groups. Analysis of duty hours per round trip further confirms consistent engagement beyond legal limits without overtime compensation, indicating clear non-compliance with statutory working hour provisions.

t-Test Curve : Working Hours vs Legal Norm



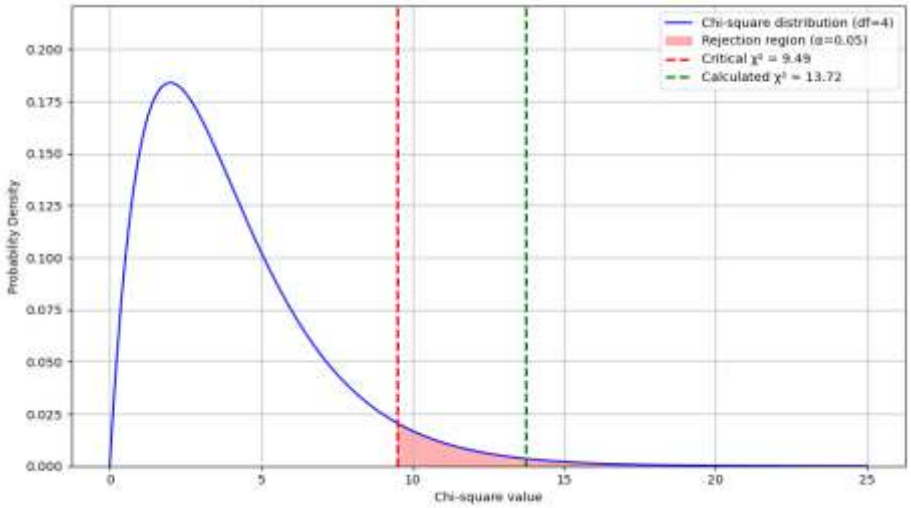
9.4. Ch-Square Test for Exploitation Patterns of the Unorganised Workers :

Observed Frequencies (O)		
Exploitation Type	Food Supply Bearers	Linen Supply Workers
Excess working hours	25	17
Forced overpricing	23	NA
Wage deductions	19	9
Verbal abuse/threats	17	12
Carrying unauthorised passengers	13	8
Expected Frequencies (E)		
Excess working hours	28.49	13.51
Forced overpricing	15.60	7.40
Wage deductions	18.99	9.01
Verbal abuse/threats	19.68	9.32
Carrying unauthorised passengers	14.26	6.74
Chi-Square ($\chi 2$) = $\sum$(O−E)^ 2 /E		
Excess working hours	0.43	0.91
Forced overpricing	3.51	7.40
Wage deductions	0.00	0.00
Verbal abuse/threats	0.36	0.77
Carrying unauthorised passengers	0.11	0.23

Chi-Square Test of Association : The total Chi-square value was found to be $\chi^2 = 13.72$ with 4 degrees of freedom (df = 4). The critical value of χ^2 at 5% level of significance ($\alpha = 0.05$) and df = 4 is 9.49. Since the calculated χ^2 (13.72) is greater than the critical value (9.49), the null hypothesis is rejected.

Interpretation ***Chi-square analysis reveals a significant association between worker category and reported forms of exploitation ($\chi^2 = 13.72$, df = 4, $p < 0.05$), indicating distinct exploitation patterns among the two groups. Forced overpricing emerged as an issue unique to Food Supply Bearers, confirming a significant difference in the distribution of exploitative practices between Food Supply Bearers and Linen Supply Workers.***

Ch-Square Curve on Exploitation Patterns of the Unorganised Workers



11. Legal and Institutional Dimensions :

The study identifies widespread non-compliance with labour laws, including the absence of EPF, ESI, minimum wages, and leave entitlements. Institutional oversight remains weak, with limited inspections and minimal accountability of contractors. These gaps underscore the need for formal recognition of onboard service workers under labour legislation and stricter enforcement mechanisms.

12. Discussion :

The findings reveal systemic exploitation embedded within outsourced onboard services. Workers face excessive working hours, unstable and informal wage systems, frequent abuse, and negligible institutional protection. These conditions are not isolated anomalies but structural outcomes of weak governance in contract labour arrangements.

13. Recommendations :

- Extend statutory social security coverage to all onboard service workers.
- Replace commission- and trip-based payments with guaranteed minimum wages.
- Enforce principal employer responsibility for contractor-employed workers.
- Conduct regular labour inspections on running trains.
- Establish accessible grievance redressal mechanisms.

14. Conclusion :

Unorganised onboard service workers in Indian Railways experience persistent socio-economic and legal insecurity arising from informal employment structures and inadequate regulatory oversight. The study demonstrates the need for comprehensive policy reforms aimed at wage stabilisation, statutory protection, and effective institutional monitoring. By documenting empirical evidence from the Northeast Frontier Railway, this research contributes to the broader discourse on outsourced labour in public transport and provides a foundation for future academic inquiry and policy intervention.

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