

## Beyond the tracks: Understanding the work-life dynamics of Indian railway drivers

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**Abstract:** This study explores the relationship between work-life balance and quality of life among Indian Railways' drivers (loco pilots). It specifically examines the concept of time balance, referring to the equal distribution of time between work and family life. The findings suggest that drivers who allocate more time to family than to work report a higher quality of life compared to those who prioritize work over family. This article proposes a conceptual framework identifying the key factors influencing work-life balance among Indian Railways' drivers, including organizational policies and their impact on personal well-being. Finally, this study discusses the broader implications of these findings and suggests directions for future research.

**Keywords:** *Railway driver, Working conditions, Stress and Work-life balance.*

### 1. Introduction

"Work" refers to an employing organization that compensates individuals for their contributions. In contrast, "Life"- specifically family or personal life- represents a social unit that expects certain responsibilities from its members to ensure the well-being and maintenance of the household.

Work-life balance is the term used to describe workplace practices that recognize and support employees in managing the demands of both their professional and personal lives. A healthy work-life balance not only contributes to the well-being of employees but also enhances organizational productivity and sustainability [1].

Indian Railways' drivers (Loco Pilots) hold a crucial role in the nation's transportation system. They bear immense responsibility, as the safety and timely travel of millions of passengers rely on their performance. In essence, the lives of crores of individuals are in the hands of these drivers. Their role demands a high level of dedication, as they are accountable for both safety and punctuality. Operating a train requires constant vigilance, concentration, and responsiveness, especially when navigating signals, track changes, and varying environmental conditions.

### 2. Need of the Study

Indian Railways' drivers face numerous challenges that significantly impact their work-life balance. One of the most pressing issues is their extremely irregular and unpredictable working hours, which contribute to increased workload and stress. Their duty schedules are not fixed and are entirely dependent on train timings, meaning they may be called to work at any time- day or night- without prior notice. This lack of routine often leads to fatigue, especially when assigned to night shifts or odd hours.

In addition to irregular hours, the physical working environment also adds to their stress. Factors such as high noise levels, uncomfortable cabin temperatures, and constant vibrations further intensify the pressure of their job. Moreover, the shortage of drivers has resulted in longer working hours and a heavier workload, further exacerbating stress levels.

These conditions not only affect the well-being of the drivers but also pose serious safety risks. Historically, several accidents have been linked to driver fatigue and stress, highlighting the urgent need to address these issues. Ensuring a healthy work-life balance for railway drivers is, therefore, not just a matter of employee welfare, but a critical component of passenger safety.

The primary objective of this study is to explore and understand the lived experiences of Indian Railways' drivers in relation to their work-life quality. Promoting work-life balance among these drivers is essential to ensure the safe and timely transport of millions of passengers across the country.

### 3. Literature Review

There is a notable scarcity of published research specifically addressing the working conditions and work-life balance of Indian Railways' drivers. Due to this limited availability, studies from other countries and related occupations have been considered to support and contextualize the current study.

In the 1970s and 1980s, several international studies examined the effects of shift work. Findings indicated that sleep is often disrupted and shortened before early morning shifts or following night shifts [2, 3]. A Japanese study by Kogi and Ohta [4] found that approximately 17% of accidents were linked to driver sleepiness. Similarly, a Danish study by Netterstrøm, et al. [5] highlighted irregular working hours and challenging physical environments as significant issues for train drivers.

Wilson and Norris [6] observed rapid growth in rail human factors research, driven by increasing concerns about safety, technological advancements, organizational changes, and rising public and governmental interest. These factors have intensified the need to understand and improve railway work environments globally.

Beauregard and Henry [7] emphasized that work-life balance practices can positively influence organizational performance, suggesting that traditional business cases for such practices should be broadened to include enhanced social exchanges and increased productivity.

Şahin and Yüceoğlu [8] examined tactical crew capacity planning in railways, focusing on minimizing crew numbers while satisfying strict day-off requirements- highlighting the tension between operational efficiency and employee well-being.

In the Indian context, Prakash, et al. [9] identified various job-related stressors affecting the work environment of railway engine pilots, while Ferguson, et al. [10] explored the role of social support from coworkers and partners in improving satisfaction through better work-life balance.

Jayakumar [11] observed that the number of employees with more than 12 stress factors was higher in the loco pilot study group.

One Indian labour historian and journalist Zaen [12] stated, loco pilots are being pushed to the limit to cover the work on the railways- through lengthening work hours, continuous night shifts and reduced rest times. These conditions go a long way in explaining the recent spate of fatal railway accidents.

Disaster waiting to happen: “*Neend nahin aayegi kya?*”

The fatigue caused by long working hours, continuous night shifts, and lack of good and accumulated sleep are major factors which lead to railway accidents. As one clearly underslept LP, angry and agitated after describing the long shifts of railway workers replied when I asked him about the experience of piloting a train after inadequate sleep: “*Ham insaan hai ... hame neend nahin aayegi kya* (We are human, will we not feel sleepy)?” Zaen [12].

Kaushal and Garima [13] observed that Loco pilots received an average amount of support from the family, low emotional regulation and high job stress. Findings of their study indicated that family environment and emotional regulation are important variable on job stress among Loco Pilots.

Deborah [14] in his review article deals with how overtime has made a major impact in the life of loco pilots and that those impacts are not brought to light and through this article the difficulties and impact of these Loco Pilots due to overtime will be given importance.

Shekhawat, et al. [15] stated that the job of loco pilots of Indian Railways is very demanding as they are responsible for operating locomotives and ensuring the safe and timely transportation of people and goods across the vast and diverse landscape of the country. So, they are prone to various mental health issues.

Despite these valuable contributions, research specific to Indian Railways' drivers remains limited. This study addresses that gap by introducing foundational concepts that explain how irregular work hours, elevated stress levels, and intense mental workload can increase the risk of accidents and human error.

Railways are often described as the lifeline of the nation, responsible for transporting millions of passengers safely every day. The safety and security of this vast number of passengers largely depend on the performance and well-being of railway drivers. Therefore, understanding and enhancing the quality of work life for Indian Railways' drivers is of national importance.

It is the responsibility of the government and railway authorities to ensure that drivers are provided with appropriate facilities and support systems to maintain a healthy work-life balance. Creating a stress-free work environment not only benefits the employees but also contributes to safer railway operations.

The findings of this study offer valuable insights into the complex dynamics of railway drivers' work-life. They underscore the numerous factors that can influence job satisfaction, mental health, and overall performance. Based on these insights, the study proposes practical tools and recommendations to help Indian Railways identify, assess, and improve the key factors affecting drivers' work-life balance.

#### 4. Selection of Participants

The participants for this study comprised railway drivers employed under the East Central Railway (ECR) zone, headquartered in Hajipur. Specifically, the study focused on the Sonpur Division- one of the 81 divisions across the 17 zones of Indian Railways. A total of 100 drivers were selected from an approximate national pool of 100,000 drivers.

The sample included drivers with varying levels of experience and those assigned to different routes, to ensure a diverse range of perspectives regarding their work-life quality. All participants in the study were male, reflecting the current demographic reality, as the number of female railway drivers in India remains very limited.

#### 5. Research Methodology

To gain a deeper understanding of the quality of work-life among Indian Railways' drivers, this study adopts an applied research approach, utilizing questionnaire-based interviews as the primary data collection method.

Work-life balance is assessed using the concept of time balance, which refers to the equal allocation of time between work and family responsibilities. This study focuses on direct measures of time balance by comparing the number of hours spent at work with those dedicated to family life. These metrics provide valuable insights into how equitably drivers are able to divide their time between their professional duties and personal commitments.

Time spent on work is measured by asking participants to report the number of hours they typically work each week. This weekly figure is used to estimate annual work hours, which are then divided by 52 to calculate the average weekly working hours.

Time spent on family is calculated by summing the number of hours per week that participants engage in family-related activities.

To quantify time balance, the study employs the balance coefficient developed by Deborah [14]. This coefficient ranges from -1 to +1, with 0 indicating perfect balance- i.e., equal time devoted to both

work and family. A positive score indicates a family imbalance, reflecting more time spent on work, whereas a negative score signifies a work imbalance, indicating more time devoted to family activities than to work.

## 6. Findings Regarding Work-Life Balance of Railway Drivers in India

The study revealed several critical insights into the work-life balance experiences of Indian Railways' drivers, particularly those in the East Central Railway (ECR) zone. Key findings include:

### 6.1. Time Imbalance Is Common

Analysis using Deephouse's time balance coefficient indicated that a majority of drivers experienced a positive imbalance, meaning they spent significantly more time on work than on family activities. This reflects a substantial work-life conflict, with personal and family time often sacrificed due to irregular and extended work hours.

### 6.2. Irregular Schedules Contribute to Stress

Drivers reported that their unpredictable schedules—being called for duty at any time of day or night based on train timings—disrupted their personal routines and led to **chronic fatigue**. Many expressed difficulties in maintaining regular sleep patterns or engaging in meaningful family interactions.

### 6.3. Impact of Staff Shortages

Due to a shortage of trained drivers, existing personnel are often required to work overtime or with minimal rest between shifts. This increased workload not only affects their mental and physical health but also reduces the time available for family life, further worsening work-life balance.

### 6.4. Limited Support Systems

Most participants reported a lack of organizational support systems, such as counseling services, flexible shift management, or wellness programs. This absence of support increases feelings of isolation and stress among drivers.

### 6.5. Family Life Suffers

Drivers consistently highlighted how their family relationships were strained due to long absences from home and missed family events. The inability to maintain a consistent presence in family life negatively impacted their quality of life and emotional well-being.

### 6.6. Need for Policy Reforms

The findings suggest a strong need for policy-level interventions aimed at improving work schedules, increasing staffing levels, and introducing measures that promote a healthier work-life balance.

These findings underscore the importance of prioritizing the well-being of railway drivers—not only for their own health and job satisfaction but also for ensuring the safety and efficiency of the railways as a whole.

## 7. Conclusions

Work-life (or family-life) balance plays a significant role in determining overall quality of life, particularly when individuals are able to allocate substantial time across both professional and personal roles. The findings indicate that quality of life tends to be highest among those who are more engaged and satisfied with their family life compared to their work life. Conversely, individuals who are more invested in their work at the expense of family tend to report lower quality of life.

Furthermore, it was anticipated that individuals who maintain a balanced distribution of time and attention between work and family would experience lower levels of work-family conflict and reduced stress. The study supports this assumption, emphasizing the importance of achieving a healthy balance to promote both personal well-being and professional effectiveness.

#### 7. Limitations and Future Scope of the Study

This study primarily focused on the balance between work and family roles, using time allocation as the key measure. However, a more comprehensive understanding of work-life balance would require the inclusion of additional dimensions—such as involvement and satisfaction—across a wider range of life roles, including leisure, personal development, and community engagement.

While this research provides valuable insights into the work-life dynamics of Indian Railways' drivers, further studies are necessary to deepen our understanding of the broader implications and nuanced experiences of work-life balance within this occupational group. Future research could also explore gender perspectives, mental health impacts, and the effectiveness of organizational interventions aimed at improving drivers' well-being.

#### Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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## Appendix

Formula for calculating "time balance coefficient" Deephouse [16].

Coefficient equals  $(w^2-wf)/t^2$  if  $w>f$

Coefficient equals  $(wf-f^2)/t^2$  if  $f>w$

Coefficient equals 0 (zero) if  $w=f$ ,

Where "w" is the work hours per week; "f" is the family hours per week; "t=w+f".