



Labour Governance: Work–Life Balance and Struggles of Truck Drivers

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ABSTRACT

The truck transport sector plays a pivotal role in sustaining economic activity, yet drivers face complex challenges that compromise their work–life balance and overall well-being. Unlike many professions, drivers is characterized by irregular schedules, unsafe conditions, and minimal access to welfare provisions, all of which strain drivers' personal and family lives. While existing research has emphasized goods logistics, safety, and efficiency, the live experiences of drivers—particularly the interplay between occupational pressures and personal challenges—remain underexplored. This study investigates the key challenges shaping the work–life balance of truck transport drivers with specific attention to personal/family, work-related, and systemic factors. Guided by theoretical models such as the Job Demands–Resources (JD-R) framework, the Job Demands–Control (JDC) model, and Organizational Support Theory, the study tests the null hypothesis that these challenges do not significantly predict outcomes including organizational and policy support, family and social life, health and well-being, economic and job security, and working conditions. A convergent mixed-methods cross-sectional design was adopted, integrating quantitative and qualitative approaches. Quantitative data were collected through a structured survey employing time–location

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sampling (TLS) across major transport hubs, truck terminals, toll plazas, and resting hubs in Thiruvananthapuram. A minimum sample size of 120 drivers was determined using Cochran's formula, ensuring representativeness across 4 venue-time units. Complementary qualitative insights were drawn from semi-structured interviews to capture the lived realities of drivers. By systematically analyzing the predictors of work-life balance among drivers, the study not only highlights the occupational, systemic, and personal burdens faced by this workforce but also underscores the urgent need for policy reform, organizational support mechanisms, and infrastructure development. The findings offer actionable insights for policymakers, transport organizations, and labor groups to improve drivers' quality of life while ensuring sustainability and efficiency in the freight transport sector.

1.0 Introduction

The truck transport industry is a vital area of national and global economies, ensuring that mobility efficiently and without disruption. At the heart of this sector are goods transport drivers, who spend more hours navigating highway roads and covering distances to meet the ever-growing demand for timely deliveries. While their contribution is indispensable, the realities of their work come with significant challenges that extend far beyond the professional domain and directly affect their personal lives.

Unlike many other professions, goods transportation is marked by irregular schedules, disrupted sleep patterns, and physically demanding conditions. Within this context, work-life balance becomes a pressing issue. Work-Life Balance (WLB)—commonly understood as maintaining a healthy relationship between professional duties and personal responsibilities—plays a crucial role in shaping health, well-being, and productivity. For goods transport drivers, however, achieving this balance is exceptionally difficult due to the unique demands of their job: constant travel, job insecurity, extended shifts, and limited access to welfare or support facilities.

Much of the existing research on the truck transport sector has centered on logistics, efficiency, and safety, while the live experiences of drivers, particularly their personal and social struggles, remain underexplored. Bringing these issues into focus is not only vital for improving the quality of life of drivers but also for ensuring long-term workforce stability, organizational effectiveness, and safer roads.



1.1 Review of Literature

Driving as an occupation is marked by working hours, irregular schedules, and extended periods away from home, leading to significant challenges for maintaining work–life balance (Amoadu et al., 2024; SaveLIFE Foundation, 2020; Hege et al., 2019). Extended work organization patterns, low job control, and inadequate rest contribute to fatigue, sleep disorders, and poor recovery, which cascade into heightened risks of obesity, cardiovascular problems, musculoskeletal disorders, and mental health concerns such as depression (Virgara et al., 2024; Tahernejad et al., 2024; Tripathi et al., 2025). Psychosocial burdens, including social isolation, low occupational status, and limited family engagement, further exacerbate stress spillover into personal life (Hege et al., 2019; Amoadu et al., 2024; Save LIFE Foundation, 2020). Compounding these difficulties, infrastructure deficits such as poor availability of safe parking, sanitation, and food facilities hinder healthy routines, though initiatives like the Ministry of Road Transport and Highways’ Wayside Amenities Program aim to address these gaps (Amoadu et al., 2024; MoRTH, 2021; NHAI, 2021). Safety risks from fatigue, poor roads, and uneven enforcement of labor regulations reinforce family anxieties and limit recovery opportunities (Hege et al., 2019; SaveLIFE Foundation, 2020; Amoadu et al., 2024). Moreover, while digital monitoring technologies can optimize goods logistics, they often intensify stress unless supported by organizational measures such as flexible schedules and wellness programs (Amoadu et al., 2024; Hege et al., 2019). Evidence suggests that multi-component health interventions, coupled with policy enforcement of rest-break standards and infrastructure upgrades, hold the potential to reduce fatigue and improve both driver well-being and family integration, thereby supporting work–life balance (Virgara et al., 2024; MoRTH, 2021).

1.2 Conceptual Framework

The conceptual framework underpinning this study views the Work–Life Balance (WLB) of truck transport drivers as the outcome of an interplay between work organization, health status, psychosocial environment, infrastructure, safety climate, and technological pressures. At the core, time-intensive work arrangements—long driving hours, irregular schedules, and low autonomy—directly constrain drivers’ discretionary time and increase fatigue, which are primary antecedents of WLB difficulties (Amoadu et al., 2024; Hege et al., 2019). These organizational demands are compounded by health-related burdens, such as obesity, musculoskeletal disorders, sleep problems, and mental health stress, which both reduce productivity and limit meaningful family participation (Virgara et al., 2024; Tahernejad et al., 2024; Tripathi et al., 2025). Psychosocial factors—including social isolation, stigma, and low occupational status—further erode morale and hinder integration into family and community life (Save LIFE Foundation, 2020; Hege et al., 2019). The



framework also recognizes infrastructure and environmental deficits, such as inadequate rest stops, sanitation, and roadside amenities, which exacerbate fatigue and prevent restorative recovery; however, government interventions like the Wayside Amenities program offer potential buffers (MoRTH, 2021; NHAI, 2021). Safety and regulatory gaps, particularly weak enforcement of labor protections and inconsistent standards, reinforce stress spillover into family domains by sustaining high accident and injury risks (SaveLIFE Foundation, 2020; Amoadu et al., 2024). Finally, technological and industry changes, including digital monitoring and automation, create dual pressures: while they can enhance efficiency, they also introduce new stressors if unaccompanied by supportive policies (Amoadu et al., 2024). Collectively, these factors interact to compress drivers' time, heighten fatigue, and increase psychosocial strain, thereby reducing opportunities for family engagement and recovery. Conversely, organizational supports, health interventions, and infrastructure investments serve as mediating mechanisms that can alleviate work stress, improve recovery, and foster better work–life balance among drivers (Virgara et al., 2024; Hege et al., 2019; MoRTH, 2021).

1.3 Statement of the Problem

Despite being central to the smooth functioning of the logistics mobility, goods transport vehicle drivers continue to face persistent challenges in balancing work with personal life. Long hours on the road, tight delivery deadlines, and extended absences from home frequently result in physical fatigue, disrupted sleep, stress, and other health-related problems. These work pressures often spill over into drivers' personal lives, straining family relationships, limiting social interactions, and eroding psychological well-being.

The problem is further compounded by weak regulatory enforcement, minimal organizational support, and inadequate welfare measures. Many drivers lack reliable rest breaks, access to healthcare, or workplace mechanisms that could help them manage both professional and personal responsibilities more effectively. As a consequence, issues such as job dissatisfaction, social isolation, family conflict, and deteriorating health are widespread. These challenges not only diminish the drivers' quality of life but also threaten the overall efficiency and safety of the transport sector.

Against this backdrop, it becomes essential to examine how drivers themselves perceive and navigate their work–life balance, the specific difficulties they encounter, and the kinds of support or interventions that could alleviate their burden. Addressing these concerns will generate valuable insights for policymakers, employers, and labor organizations, helping to create strategies that safeguard drivers' well-being while strengthening the sustainability of the truck transport industry.



1.4 Objectives of the Study

1. To identify the key labour challenges faced by truck drivers.
2. To evaluate how labour challenges affect truck drivers ability to maintain work–life balance.

1.5 Development of Hypothesis

The null hypothesis in this study assumes that Personal/Family Challenges, Work Life Challenges, and Systemic Challenges do not significantly predict outcomes related to truck drivers' WLB including Organizational and Policy Support, Family and Social Life, Health and Well-being, Economic and Job Security, and Working Conditions. This assumption is situated within key theoretical frameworks of occupational stress and work–life interaction. The Job Demands–Resources (JD-R) model posits that employee well-being depends on the dynamic balance between job demands, such as working hours and unsafe conditions, and the resources available to cope with them, such as organizational support and infrastructure (Bakker & Demerouti, 2007). If no predictive link were established, it would contradict the JD-R framework, which emphasizes the systematic influence of demands on work–life outcomes. Similarly, Karasek's (1979) Job Demands–Control (JDC) model argues that high job demands, when coupled with low levels of control, generate adverse health and well-being outcomes. In the case of truck transport drivers, work life challenges represent high demands, personal and family issues reflect low recovery or control, and systemic challenges highlight structural constraints. Ignoring their predictive role would run counter to this theoretical foundation. Organizational Support Theory further suggests that employees who perceive stronger organizational backing experience less work–family conflict and greater integration between work and personal life (Eisenberger et al., 1986). Testing the null hypothesis—assuming no significant association—provides a rigorous empirical assessment of whether this theory holds in the transport sector, where drivers often face minimal institutional support. Finally, empirical research on truck transport drivers consistently highlights that poor work organization, high stress, and inadequate sleep quality significantly affect work–life balance and overall well-being (Hege et al., 2015). Thus, framing the null hypothesis in this way provides both theoretical and empirical justification for examining whether these challenges meaningfully shape drivers' experiences.

Null Hypothesis (H_0): Personal/Family Challenges, Work Life Challenges, and Systemic Challenges do not significantly predict the dependent variables (Organizational and Policy Support, Family and Social Life, Health and Well-being, Economic and Job Security, and Working Condition).

1.6 Research Design and Sampling Techniques

This study followed a convergent mixed-methods cross-sectional design, integrating both quantitative and qualitative approaches. Quantitative data were collected through a structured survey using a Time–Location Sampling (TLS) strategy, while qualitative insights were drawn from semi-structured interviews to capture the lived experiences of drivers. TLS was chosen because it provides reliable and generalizable estimates for mobile and hard-to-reach populations such as long-haul freight drivers. The target population consisted of truck transport drivers operating inter-city or short-haul routes and frequenting major transport hubs and wayside facilities in Thiruvananthapuram. Eligible participants included male and female drivers aged 18 years and above who were actively engaged in driving truck transport vehicles and who consented to participate. Drivers on medical leave, goods or assistants not directly operating the vehicle, and those unwilling or unable to provide consent were excluded.

To construct the sampling frame, key locations across Thiruvananthapuram were identified through informal field observations and consultations with local informants. The selected sites included truck terminals, toll plazas, rest areas, large fuel stations, and logistics terminals. Each location was then divided into four time slots—daytime, evening, midnight, and early morning—to capture the variability of driver movements and availability. The required sample size was determined using Cochran’s formula, resulting in a minimum of 120 respondents at a 95% confidence level with a 5% margin of error. In practice, the study covered venues across 4 time slots each, yielding needed Venue–Time Units (VTUs). From each VTU, approximately 20 drivers were surveyed, ensuring that the overall sample was both representative and evenly distributed across time and space.

Sample Size Calculation Formula

$$n_0 = \frac{Z^2 \cdot p \cdot q}{e^2}$$

1.7 Truck Transport Drivers Perception Regarding the Challenges existing the sector

Table: Respondents Perception Regarding Personal/ Family Related Challenges				
	Mean	SD	T	p-v
Work–family imbalance during trips and irregular schedules	4.16	.834	27.156	.000



Social isolation and reduced participation in community life	4.30	.655	38.848	.000
Health issues (obesity, fatigue, sleep disorders, hypertension etc.)	3.49	1.254	7.612	.000
Mental health stress (anxiety, depression, loneliness)	4.18	.917	25.328	.000
Family safety concerns regarding road accidents and crime	4.46	.810	35.392	.000
Financial pressures (unstable income, debts, fuel costs)	4.22	.763	31.451	.000
Limited ability to support children's education and family responsibilities	3.83	1.041	15.596	.000
<i>Source: Primary Data</i>				

A one-sample t-test was conducted to examine drivers' perceptions of the personal and family life challenges influencing their work life. The analysis revealed consistently high mean scores (all above 3 on a 5-point scale), indicating broad agreement among respondents that these challenges have a significant impact.

Among the identified issues, family safety concerns related to accidents and crime ($M = 4.46$, $SD = 0.810$) and social isolation with reduced participation in community life ($M = 4.30$, $SD = 0.655$) emerged as the most pressing concerns. These findings highlight the extent to which safety risks and prolonged absence from family and community weigh heavily on drivers. Financial pressures ($M = 4.22$, $SD = 0.763$) and mental health stress, including anxiety, depression, and loneliness ($M = 4.18$, $SD = 0.917$) were also rated highly, underscoring the financial instability and psychological burden associated with the profession. Health-related challenges such as fatigue, obesity, and sleep disorders, while comparatively lower ($M = 3.49$, $SD = 1.254$), were nonetheless significant and point to persistent health risks faced by this occupational group.

The large and statistically significant t-values across all items ($p < 0.001$) confirm that the observed mean scores differ substantially from the neutral test value, thereby validating the conclusion that these challenges are both systematic and strongly experienced by the respondents.

Taken together, the results demonstrate that personal and family life challenges exert a significant influence on the work lives of truck transport drivers. Beyond physical health concerns, drivers contend with financial instability, social isolation, mental stress, and persistent safety anxieties, all of which contribute to heightened strain and disruptions in their WLB.

Table: Respondents Perception Regarding Work Life Related Challenges				
	Mean	SD		
Irregular working hours beyond legal limits	4.42	.494	56.290	.000

Poor road infrastructure, congestion, and unsafe driving conditions	4.43	.705	39.883	.000
Lack of safe and hygienic rest areas on transit limits	4.40	2.694	10.171	.000
Low wages, exploitation, and lack of overtime compensation	2.86	1.464	-1.812	.071
High risk of accidents, injuries, and occupational hazards	2.84	1.483	-2.064	.040
Absence of social security, insurance, and pension benefits	4.60	.542	57.736	.000
Pressure from employers to meet unrealistic delivery deadlines	4.76	.486	70.871	.000
Rising operational costs (fuel, maintenance, tolls)	4.02	.803	24.853	.000
Regulatory burdens and harassment at checkpoints	4.26	.439	56.206	.000
Lack of training in digital/logistics technology	3.49	1.203	7.935	.000
Job insecurity due to subcontracting and automation	4.41	.552	49.938	.000

Source: Primary Data

A one-sample t-test was employed to evaluate drivers' perceptions of work-related challenges affecting their professional lives. The findings show that most of the challenges received high mean scores, indicating strong agreement among respondents regarding their adverse impact.

The most critical concerns identified were pressure from employers to meet unrealistic delivery deadlines ($M = 4.76$, $SD = 0.486$), absence of social security, insurance, and pension benefits ($M = 4.60$, $SD = 0.542$), and poor road infrastructure and unsafe driving conditions ($M = 4.43$, $SD = 0.705$). Similarly, long and irregular working hours beyond legal limits ($M = 4.42$, $SD = 0.494$) and job insecurity due to subcontracting and automation ($M = 4.41$, $SD = 0.552$) were rated very highly, underscoring the demanding, insecure, and often unsafe nature of the profession.

Rising operational costs ($M = 4.02$, $SD = 0.803$), regulatory burdens and harassment at checkpoints ($M = 4.26$, $SD = 0.439$), and lack of safe and hygienic rest areas ($M = 4.40$, $SD = 2.694$) were also identified as significant stressors, reflecting the structural and systemic barriers drivers routinely encounter. The issue of lack of training in digital/logistics technology ($M = 3.49$, $SD = 1.203$) was rated moderately high, suggesting that technological change poses adaptation challenges but is not perceived as severe as other structural problems.

Interestingly, two challenges—low wages and lack of overtime compensation ($M = 2.86$, $SD = 1.464$, $p = 0.071$) and high risk of accidents and occupational hazards ($M = 2.84$, $SD = 1.483$, $p = 0.040$)—received relatively lower mean scores, with the former not reaching statistical significance. This suggests that while drivers recognize risks and wage issues, they may not perceive them as immediate or pressing compared to the overwhelming burden of deadlines, lack of social protection, and regulatory harassment.

Overall, the results highlight that structural, organizational, and systemic challenges significantly shape the work experiences of truck transport drivers, with workload pressures, lack of social security, and poor infrastructure emerging as the most pressing issues.

Table: Respondents Perception Regarding Systemic Challenges				
	Mean	SD		
Social stigma or low status attached to the profession reduces morale.	4.63	.572	55.809	.000
Lack of community recognition despite their economic contribution.	4.37	.514	52.113	.000
Social isolation due to being on the road most of the time.	4.17	.624	36.613	.000
Poor quality of roads, urban traffic, and roadside amenities.	4.35	.477	55.387	.000
Limited availability of safe parking, restrooms, and food facilities.	4.48	.587	49.405	.000
Exposure to extreme weather conditions while driving long hours	4.37	.515	52.177	.000
Weak enforcement of labor rights (working hours, rest periods).	3.80	1.390	1.469	.000
Lack of uniform regulations across regions, leading to confusion.	4.93	1.453	-.913	.00
Insufficient government welfare schemes targeting drivers	4.57	.556	55.290	.000
High risk of accidents due to fatigue, poor roads, and overloading.	4.78	.485	71.827	.000
Threat of time bounding, sharpness, or harassment during long-distance hauls.	4.05	.804	25.692	.000
Inadequate insurance or accident coverage for drivers and families	4.40	.491	55.944	.000
Increasing demand for digital tracking and monitoring adds stress.	3.26	1.346	3.791	.000
Pressure from real-time goods logistics systems reduces flexibility.	4.42	.495	56.402	.000
Rapid industry changes (automation, AI in goods logistics) create fear of job loss	4.07	1.203	17.482	.000
<i>Source: Primary Data</i>				

A one-sample t-test was conducted to examine drivers' perceptions of socio-structural and occupational challenges that shape their professional and personal experiences. The findings reveal consistently high mean scores for most variables, indicating that respondents strongly agree these issues adversely impact their work and well-being.

Among the most pressing challenges, high risk of accidents due to fatigue, poor roads, and overloading ($M = 4.78$, $SD = 0.485$) emerged as the most critical concern, reflecting the hazardous conditions drivers face daily. Similarly, social stigma and low status attached to the profession ($M = 4.63$, $SD = 0.572$), insufficient



government welfare schemes ($M = 4.57$, $SD = 0.556$), and limited availability of safe parking, restrooms, and food facilities ($M = 4.48$, $SD = 0.587$) were rated very highly, suggesting that lack of recognition, systemic neglect, and inadequate amenities undermine both the dignity and safety of drivers.

Other significant challenges included pressure from real-time goods logistics systems ($M = 4.42$, $SD = 0.495$), poor road infrastructure ($M = 4.35$, $SD = 0.477$), exposure to extreme weather conditions ($M = 4.37$, $SD = 0.515$), and inadequate insurance or accident coverage ($M = 4.40$, $SD = 0.491$). These findings highlight how both physical working conditions and institutional shortcomings compound the stress and insecurity experienced by drivers.

Moderately high concerns included social isolation due to long hours on the road ($M = 4.17$, $SD = 0.624$), threats of theft and harassment ($M = 4.05$, $SD = 0.804$), and rapid industry changes creating fear of job loss ($M = 4.07$, $SD = 1.203$). These issues emphasize the vulnerabilities linked to urban-distance travel, lack of security, and technological disruption.

In contrast, weak enforcement of labor rights ($M = 3.80$, $SD = 1.390$) and increasing demand for digital tracking and monitoring ($M = 3.26$, $SD = 1.346$) were rated somewhat lower, though still statistically significant, suggesting that while important, these are not perceived as urgent as the physical risks and systemic neglect drivers face. Notably, lack of uniform regulations across regions ($M = 4.93$, $SD = 1.453$) produced an unusual distribution and negative t-value, which may reflect variability in responses or interpretive ambiguity among drivers.

Overall, the results underscore that drivers' work is shaped by a combination of high physical risk, social stigma, poor infrastructure, and inadequate institutional support, with systemic neglect and safety concerns outweighing technological or regulatory challenges.

Table: Stress and Fit Measures- P/F Challenges, W-Challenges, and S-Challenges (Model Fit Indices)			
	*P/F Challenges	**W-Challenges	***S-Challenges
Normalized Raw Stress	.074304	.082451	.074304
Stress-I	.02456	.07543	.08989
Stress-II	.04785	.02345	.088271
S-Stress	.08543	.018054	.08412
Dispersion Accounted For (D.A.F.)	.93001	.97569	.91740
Tucker's Coefficient of Congruence	.92352	.91432	.92674
PROXSCAL minimizes Normalized Raw Stress.			

a. Optimal scaling factor = 1.147., 1.093, 1.223
b. Optimal scaling factor = .924., .953, .932
* <i>Personal/Family Challenges</i> , ** <i>Work Life Challenges</i> , *** <i>Systemic Challenges</i>
<i>Source: Primary Data</i>

The table presents the model fit indices of the PROXSCAL model regarding P/F challenges, W-Challenges, and S-Challenges, where dissimilarities and interval measurement were considered in the analysis. A two-dimensional PROXSCAL method was applied. The results indicate that the Normalized Raw Stress, Stress-I, Stress-II, and S-Stress values are close to zero, while the dispersion accounted for is nearly 1. Additionally, Tucker's Coefficient of Congruence is close to one. Therefore, it can be concluded that the PROXSCAL model demonstrates a good fit based on these indices.

Table: PREFSCAL Result-Challenges-Multi-Dimensional					
P/F Challenges		W-Challenges		Systemic Challenges	
Dimension		Dimension		Dimension	
1	2	1	2	1	2
8.604	5.474	3.312	-9.998	-.012	8.986
9.478	4.375	1.871	-10.714	.016	8.251
.529	-8.371	.627	-10.171	.160	-6.949
-10.445	-1.301	-2.286	6.976	.089	-7.538
-11.024	-3.674	-.489	7.264	-.162	-8.001
1.410	-10.211	10.915	3.789	.072	-7.544
1.533	-9.175	-3.535	12.183	.065	4.586
		5.812	7.765	.604	4.288
		6.046	8.176	-.078	-8.136
		1.728	-8.440	.703	9.396
		-1.723	-10.611	-1.101	-6.798
				-.128	-7.721
				-1.414	-5.117
				.577	-7.835
				3.410	-6.791
<i>Source: Primary Data</i>					

The PREFSCAL analysis provides a clear spatial representation of how truck transport drivers perceive different categories of challenges. Dimension 1 (horizontal axis) distinguishes between *job and infrastructure insecurities* (such as poor roads, inadequate rest areas, and job instability) and *organizational or financial pressures* (including low wages, overwork, and accident risks). Dimension 2 (vertical axis), on the other hand, contrasts *employer-driven and systemic pressures* (like unrealistic deadlines, strict regulations, and rising operational costs) with *personal and psychosocial stressors* (such as family responsibilities, health concerns, and mental strain). The coordinate scores show that personal and family challenges are not uniform: some load strongly on the organizational/financial side (e.g., income insecurity and safety issues), while others align more with psychosocial burdens (e.g., mental health stress, family imbalance). Work-related challenges appear highly dispersed across both dimensions, with some associated with infrastructure insecurities (like poor facilities and road conditions) and others with systemic or organizational demands (such as delivery pressures and regulations). In contrast, systemic challenges cluster closer to the structural end of Dimension 2 and remain relatively neutral along Dimension 1, highlighting their consistent perception as external, institutional burdens beyond drivers' individual control. Overall, the PREFSCAL solution underscores that drivers' struggles span overlapping dimensions of infrastructure, organizational, psychosocial, and systemic pressures rather than existing in isolation.

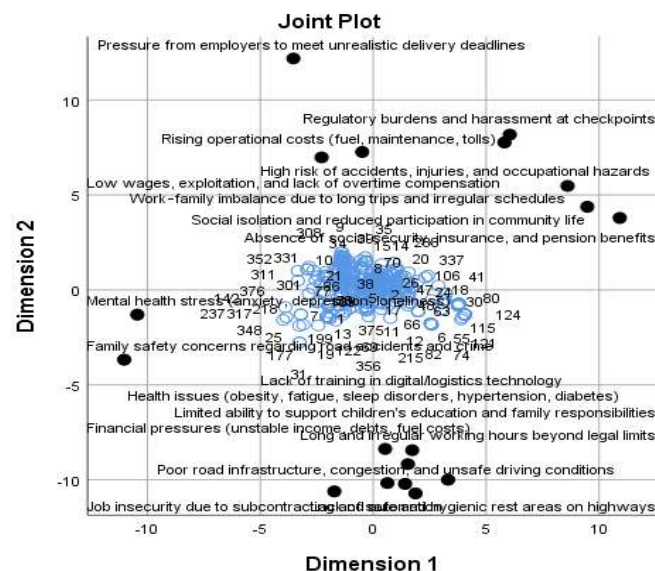


Figure 1

The PREFSCAL (Preference Scaling) joint plot provides a visual map of the challenges faced by truck transport drivers. It places both the challenges (variables) and the drivers' responses (blue points) into a



shared two-dimensional space. The two axes—Dimension 1 and Dimension 2—are not direct measures but rather statistical dimensions that capture the main patterns of association among the challenges.

Clustering of Challenges

Challenges that appear close together on the plot are perceived by drivers as related or overlapping in their impact. For instance, low wages, exploitation, and lack of overtime compensation are positioned near high risk of accidents and occupational hazards and work–family imbalance due to long trips and irregular schedules. This suggests that drivers see these problems as interconnected, particularly through their combined influence on financial strain and personal safety.

High-Loading Challenges (Outliers)

Some challenges stand apart from the main group, indicating their unique weight and influence. Pressure from employers to meet unrealistic delivery deadlines is positioned at the top of the map, showing it to be a particularly critical and distinct source of stress. At the opposite end, job insecurity due to subcontracting and automation and poor road infrastructure, congestion, and unsafe conditions form their own poles, highlighting dimensions of insecurity and infrastructure strain that differ from other concerns.

Central Cluster

Most drivers' responses fall within the dense middle cluster of the plot. This suggests that a large number of challenges are widely shared across the group. Issues like social isolation and reduced community participation, lack of social security or insurance, and mental health stress sit in this central zone, reflecting problems that are commonly experienced and broadly recognized by drivers.

Interpreting the Dimensions

1. **Dimension 1 (horizontal axis)** seems to contrast job and infrastructure insecurities (such as poor roads, lack of rest areas, and job insecurity) with organizational and financial pressures (such as low wages, exploitation, and unsafe conditions).
2. **Dimension 2 (vertical axis)** appears to separate organizational pressures from employers and regulators (e.g., unrealistic delivery deadlines, regulatory burdens) from personal and psychosocial stressors (such as mental health strain, family concerns, and financial stress).

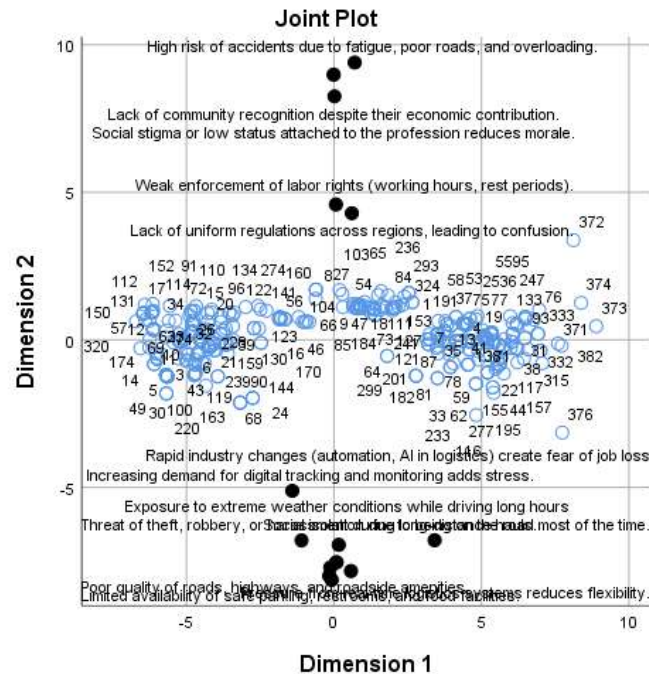


Figure 2

This PREFSCAL joint plot provides a two-dimensional spatial representation of how truck transport drivers perceive the different systemic and social challenges they face. Both the challenges (black dots with labels) and the respondents' positions (blue circles) are mapped together to highlight similarities, differences, and clustering patterns.

1. Meaning of the Dimensions

1. Dimension 1 (Horizontal axis): Separates infrastructure and technological challenges (e.g., poor roads, lack of rest areas, digital stress) on one side from systemic and recognition-related challenges (e.g., labor rights enforcement, social stigma, lack of recognition) on the other.
2. Dimension 2 (Vertical axis): Distinguishes between safety- and regulation-related pressures (top: high accident risks, weak labor enforcement, regional policy confusion) and physical/operational hardships (bottom: poor facilities, weather exposure, digital monitoring, robbery risks).

2. Clustering of Challenges

1. Top Cluster (High Dimension 2 values): Issues such as accident risks, poor enforcement of labor rights, and lack of recognition stand out as systemic pressures that drivers see as highly critical.

2. Bottom Cluster (Low Dimension 2 values): Challenges like poor road infrastructure, lack of parking/restrooms, weather exposure, and digital monitoring pressures are grouped together, reflecting the harsh physical and environmental working conditions drivers endure.
3. Middle Cluster (Near Zero): Items like automation fears and rising digital demands sit near the center, showing that these are emerging concerns but not as strongly polarized across drivers as infrastructure or recognition issues.

The dense concentration of blue circles around the center suggests that most drivers' experiences overlap in a shared middle space, meaning these systemic issues are commonly acknowledged by a wide majority rather than being niche concerns. However, the spread across both dimensions also indicates that some drivers place higher weight on safety/regulation concerns, while others feel infrastructural and operational hardships more strongly.

The PREFSCAL joint plot reveals that drivers' challenges are multidimensional, spanning systemic recognition gaps (social stigma, weak labor rights), regulatory burdens, infrastructural deficiencies (roads, rest areas), operational risks (weather, overloading), and technological stressors (digital monitoring, automation fears). The separation across dimensions highlights that these issues are not independent but interconnected—systemic failures amplify infrastructure weaknesses, which in turn heighten personal and occupational risks.

1.8 Impact of Challenges on Maintaining Work Life Balance of Truck Transport Drivers

Table: Regression Coefficients (Combined Table)- Impact of Challenges on maintaining Work Life Balance						
Dependent Variables		US-Coefficients		S-Coefficients	t	Sig.
		B	Std. E	Beta		
Organizational and Policy Support	(Constant)	3.595	.006		5.093	.000
	Personal/Family Challenges	.244	.068	.236	4.649	.000
	Work Life Challenges	.437	.041	.448	7.894	.000
	Systemic Challenges	.570	.090	.546	11.113	.000
Family and Social Life	(Constant)	4.25	.052		6.542	.000
	Personal/Family Challenges	.036	.065	.029	8.559	.000
	Work Life Challenges	.007	.090	.004	11.080	.000



	Systemic Challenges	.590	.291	.535	8.652	.000
Health and Well-being	(Constant)	3.882	.011		5.544	.000
	Personal/Family Challenges	.192	.208	.149	12.923	.000
	Work Life Challenges	.205	.289	.237	11.709	.000
	Systemic Challenges	.108	.218	.127	11.495	.000
Economic and Job Security	(Constant)	5.475	.029		3.544	.011
	Personal/Family Challenges	.351	.133	.320	17.383	.000
	Work Life Challenges	.237	.011	.248	11.581	.000
	Systemic Challenges	.370	.020	.346	9.577	.000
Working Condition	(Constant)	3.877	.018		5.897	.000
	Personal/Family Challenges	.036	.005	.029	4.254	.004
	Work Life Challenges	.546	.024	.548	12.345	.000
	Systemic Challenges	.270	.022	.246	13.001	.000
Regression ANOVA was Significant Regarding Three Predictors (Sig. . .05)						
Source: Primary Data						

The regression analysis highlights clear patterns in how different categories of challenges shape drivers' experiences. In terms of organizational and policy support, all three predictors were significant, but systemic challenges had the strongest effect, followed by work life and personal/family challenges. This indicates that gaps in welfare schemes, inconsistent regulations, and broader policy failures are central to how drivers perceive the lack of institutional support, though their everyday work struggles and family stressors also contribute.

When it comes to family and social life, systemic challenges again stand out as the dominant predictor, while personal/family and work life challenges had only minimal influence. This suggests that disruptions to family roles and social participation stem less from individual or job-related issues and more from broader systemic shortcomings, such as poor roadside amenities, social stigma, and unsafe conditions.

For health and well-being, all three predictors were significant, but work life challenges emerged as the strongest factor. Working hours, unsafe conditions, and heavy workloads appear to drive health problems most directly, while personal/family challenges and systemic stressors also play meaningful, though smaller, roles.

In the case of economic and job security, both systemic challenges and personal/family pressures exerted the strongest influence, with work life challenges also contributing but to a lesser degree. This shows that

financial stability and job security are shaped not only by household and personal responsibilities but also by structural issues like subcontracting practices, automation, and regulatory burdens.

Finally, for working conditions, work life challenges were the most powerful predictor, followed by systemic challenges, while personal/family pressures had only a minor role. This indicates that the immediate work environment—defined by delivery deadlines, employer expectations, and poor infrastructure—is largely shaped by organizational and systemic pressures rather than by family factors.

Overall, the findings make it clear that systemic challenges and work life challenges exert far greater influence than personal or family-related pressures. Systemic barriers such as policy gaps, poor infrastructure, and lack of welfare primarily affect organizational support, family/social life, and job security, while work life demands—long hours, unsafe roads, and unrealistic deadlines—are the strongest drivers of poor health and difficult working conditions. Personal and family issues, while significant, tend to function more as amplifiers of stress rather than as the root causes of imbalance. In short, the struggles faced by drivers are deeply rooted in structural and organizational systems, with personal challenges reflecting the consequences of these larger pressures rather than independent determinants.

Regression Equations

Organizational and Policy Support= $Y=3.595+0.244(P/FC) +0.437(WC)+0.570(SC)$

Family and Social Life= $Y=4.250+0.036(P/FC) +0.007(WC)+0.590(SC)$

Health and Well-being= $Y=3.882+0.192(P/FC) +0.205(WC)+0.108(SC)$

Economic and Job Security= $Y=5.475+0.351(P/FC) +0.237(WC)+0.370(SC)$

Working Condition= $Y=3.877+0.036(P/FC) +0.546(WC)+0.270(SC)$

Null Hypothesis (H₀): Personal/Family Challenges, Work Life Challenges, and Systemic Challenges do not significantly predict the dependent variables (Organizational and Policy Support, Family and Social Life, Health and Well-being, Economic and Job Security, and Working Condition).

Hypotheses Result

The study examined a set of complex hypotheses to assess the relationship between three categories of challenges—Personal/Family, Work Life, and Systemic—and the overall work–life balance of truck transport drivers. The null hypothesis (H₀) assumed that these challenges would not significantly predict the



dependent variables, namely Organizational and Policy Support, Family and Social Life, Health and Well-being, Economic and Job Security, and Working Conditions. However, the regression analysis provided strong evidence to reject the null hypothesis. The findings confirmed that all three challenges exert a significant predictive influence on the dependent variables. This outcome highlights that drivers' work-life balance is not shaped by isolated factors but by the combined effects of personal, occupational, and systemic challenges, reinforcing the need for structural and organizational interventions to ease their burdens.

1.9 Major Findings

1.9.1 Personal and Family Challenges

The study shows that personal and family difficulties weigh heavily on drivers and directly affect their ability to maintain work-life balance. The most urgent concerns include worries about family safety due to accidents and crime, prolonged separation from loved ones, and a sense of social isolation from community life. Financial strain and mental health issues—such as anxiety, depression, and loneliness—were also strongly felt, while health problems like fatigue, obesity, and sleep disorders, though reported at a slightly lower level, remain important risks. Altogether, these findings suggest that the pressures of the profession extend well beyond the workplace, straining family ties and creating significant psychological stress.

1.9.2 Work-Related Challenges

Workplace challenges were found to be severe and widespread. Drivers reported intense stress from unrealistic delivery deadlines, the absence of social protection measures like insurance and pensions, and the hazards of unsafe roads. Extended and irregular working hours, along with growing job insecurity caused by subcontracting and automation, further undermine the stability of their profession. Added to this are rising operational expenses, frequent regulatory harassment at checkpoints, and inadequate rest facilities. Although issues such as low wages and accident risks were not rated as strongly, the overall picture reveals that truck driving is an insecure, highly demanding, and often unsafe occupation.

1.9.3 Systemic and Socio-Structural Challenges

Structural and systemic barriers also emerged as major obstacles shaping drivers' lives. High accident risks linked to fatigue, overloading, and poor road conditions were rated as the most critical issue. These risks are compounded by broader problems such as the social stigma surrounding the profession, lack of effective welfare schemes, and limited roadside amenities like safe parking and restrooms. Other significant stressors include insufficient insurance coverage, harsh weather conditions, and growing pressure from real-time



logistics systems. While factors such as weak enforcement of labor rights and digital monitoring were rated less severe, they still point to the underlying vulnerabilities created by systemic neglect and policy gaps.

1.9.4 Patterns from PREFSCAL Analysis

The PREFSCAL mapping confirmed that drivers see their challenges as interconnected rather than separate. The first dimension distinguished between infrastructure-related problems, such as poor roads and rest areas, and financial or organizational pressures like low wages. The second dimension separated employer and regulatory pressures from more personal concerns, such as family responsibilities and mental health. Clustering patterns highlighted that systemic and infrastructure challenges dominate drivers' experiences, with tight deadlines and unsafe conditions standing out as particularly severe. This shows that drivers' struggles are multidimensional, spanning structural, occupational, and personal pressures all at once.

1.9.5 Regression Results

Regression analysis further revealed that systemic and work-related challenges are the strongest predictors of drivers' hardships, while family and personal issues, though important, play a smaller role. Gaps in infrastructure, welfare schemes, and policy enforcement had a strong effect on drivers' perceptions of organizational support, family and social life, and job security. Meanwhile, work demands such as long hours, unsafe roads, and delivery pressure were the leading causes of health problems and poor working conditions. Personal and family challenges intensified the stress but did not emerge as the central cause, showing that the drivers' struggles are largely rooted in structural and occupational systems.

In summary, the findings highlight that the challenges faced by truck transport drivers are deeply entrenched in systemic neglect and the demands of their profession. Policy failures, weak infrastructure, and lack of welfare provisions intersect with exhausting schedules and unsafe working conditions to create overwhelming pressures. While family and personal challenges add to the burden, they are secondary to broader systemic and organizational problems. Addressing these issues requires targeted reforms at both the policy and workplace level to reduce the compounded strain and improve the lives of drivers.

1.10 Major Suggestions

1.10.1 Strengthening Policy and Welfare Measures

Government agencies should prioritize sector-specific welfare schemes tailored for truck transport drivers. This includes extending access to **health insurance, accident coverage, and pension benefits** under existing frameworks like the Employees' State Insurance Scheme (ESI) and Pradhan Mantri Jeevan Jyoti



Bima Yojana. Policy reforms must also ensure uniform regulations across states to reduce inconsistencies and prevent harassment at checkpoints. Establishing a **dedicated driver welfare board**—similar to boards for construction or plantation workers—can institutionalize benefits and grievance redressal.

1.10.2 Improving Road Infrastructure and Rest Facilities

Investment in driver-friendly infrastructure is crucial. This means constructing safe rest areas with hygienic food, toilets, and parking facilities every on urban-ways, in line with international best practices. Roads must be upgraded to reduce accident risks from poor maintenance and overloading. Partnerships with private logistics firms can co-fund such facilities under a truck–private partnership (PPP) model, ensuring long-term sustainability.

1.10.3 Regulating Work Hours and Delivery Deadlines

Unrealistic delivery deadlines and irregular hours emerged as a major stressor. Enforcement of maximum driving hour rules (e.g., capped at 9 hours/day with mandatory breaks, as per International Labour Organization guidelines) should be strengthened through electronic logging systems. Logistics companies should adopt realistic scheduling practices that prioritize safety over speed, with penalties for violations.

1.10.4 Enhancing Job Security and Reducing Exploitation

The reliance on subcontracting creates insecurity and wage suppression. Policymakers should mandate transparent contracts and ensure timely payment of wages through digital systems to reduce exploitation. Introducing a minimum wage standard for truck transport drivers, adjusted regionally, can improve income security. Unions and associations should be empowered to negotiate collective agreements to protect workers from unfair subcontracting practices.

1.10.5 Promoting Health and Well-being

Drivers face high risks of fatigue, obesity, and stress. Regular health screening camps at transport hubs, along with subsidized medical check-ups, can address early signs of chronic illness. Awareness programs on nutrition, stress management, and safe driving practices should be integrated into training modules. Employers can also provide incentives for maintaining health records and participating in wellness programs.



1.10.6 Reducing Social Stigma and Supporting Families

Truck campaigns highlighting the role of truck transport drivers in keeping the economy moving can help counter the low social status and stigma attached to the profession. Transport companies and NGOs can support drivers' families through community engagement programs, educational scholarships for children, and counseling services to mitigate the psychological toll of prolonged separations.

1.10.7 Leveraging Technology Responsibly

While digital tracking and goods logistics technologies are essential for efficiency, they must not increase stress or surveillance pressure on drivers. Companies should use technology for support rather than punishment—for example, real-time alerts for fatigue detection, route optimization to reduce delays, and apps that connect drivers to rest areas and emergency assistance. Training programs should also help drivers adapt to new systems, reducing digital exclusion.

1.11 Conclusion

These recommendations underline the need for a multi-level approach: systemic reforms to improve welfare and infrastructure, organizational measures to regulate workloads and contracts, and personal/family support to reduce isolation and stigma. By addressing both structural and psychosocial challenges, policymakers and industry stakeholders can meaningfully improve the quality of life and work–life balance of truck transport drivers.

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