

Research Paper

## The Impact of Traffic Congestion on the Mental Health, Work Efficiency, and Family Life of Cab Drivers in Bengaluru

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### ABSTRACT

This study investigates the impact of traffic congestion on the mental health, work efficiency, and family life of 175 cab drivers in Bengaluru, India. A cross-sectional survey design was employed, utilizing the DASS-21 to assess mental health outcomes and collecting data on traffic exposure, economic factors, and family life. Results revealed significant positive correlations between traffic congestion and increased levels of stress, anxiety, and depression ( $p < .01$ ). Conversely, traffic congestion was negatively correlated with trips per day, daily earnings, and time spent with family ( $p < .05$ ). These findings highlight the urgent need for multi-faceted interventions to mitigate the detrimental effects of traffic congestion on this vulnerable population, aligning with Sustainable Development Goals related to health, decent work, and sustainable cities.

**Keywords:** *Traffic Congestion, Mental Health, Cab Drivers, Sustainable Development Goals*

Bengaluru, known as the "Silicon Valley of India," serves as a prime example of the swift urban growth and economic development seen in many emerging countries. However, this expansion has brought with it major challenges in city transportation, especially severe traffic jams (IOMC World, n.d.). The increasing population and vehicle volume in the city have resulted in gridlock, which affects commute durations, economic output, and, importantly, the health of its citizens, especially those who drive professionally (PMC, 2020).

Taxi drivers within Bangalore's transport network occupy a distinct role in the urban social structure. Their existence, financial issues, and regulations—for example, rules requiring them to drive for prolonged periods without breaks—shape their work. While driving long hours is part of their duties, stress arising from various traffic-related factors in their daily lives can also contribute to this condition; this is the related stress. The current stress levels among taxi drivers may be so high that they become anxious or angry, potentially due to disruptions in a type of neuroethology relevant to taxis (Int J Ment Health Addict. 2012). Such stress can cause mental health issues like mood disorders, anxiety, substance misuse, and road rage in drivers, which might impact generation X, considering their adverse relationships with both baby boomers and generation Y (J Trauma Manag Outcomes. 2008). Additionally, when vehicles stop, drivers lose time needed to assess and account for planned

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distances, leading to missed appointments, reduced managerial efficiency, and increased stress. The mental health challenges also connect to SDG 3, good health and well-being, underscoring the need to understand and mitigate these effects.

Apart from the mental impact, traffic congestion has various other quantifiable consequences, including lowering the efficiency of cab drivers and negatively affecting their economy. Time-consuming commutes translate into less number of trips finished in every day which means reduced available work hours and wages for the drivers. Similarly, there is a negative relationship between traffic jams and the cost of operations due to the petrol guzzling and high vehicle wear which leads to frequent break downs or frequent service and maintenance checks. It is important to note that under such circumstances, factors like financial strain and others contribute to an unsupportive work environment. Even though there are some strategies that certain drivers adopt to cope, such as playing music, practicing deep breathing, or meeting with friends, frequently these strategies do not work at the time when the situation becomes unbearable and that is in cases of prolonged and severe traffic jams. Additionally, there are broader interconnected issues like inadequate facilities, insufficient public transport, lack of effective traffic control measures, and biking challenges that must be fully addressed. This study aims to provide a comprehensive examination of the mental health challenges faced by cab drivers in Bangalore, focusing on how traffic congestion impacts them. The effect of traffic congestion on the occupational efficiency of the taxi drivers the characteristics of this occupational group necessary for this study, the planning of the coping and the evidence of the success of the methods of coping. The mental and economic well-being of these drivers directly relates to SDG 8, which focuses on decent work and economic growth, highlighting the need for policies that support their health and livelihoods.

Considering the particular challenges encountered by taxi drivers and the current strategies to address them, this research intends to offer data-driven policies and interventions focused on improving the welfare and financial conditions of the most at-risk groups.

This study will specifically examine how stress caused by traffic congestion on a regular basis influences various age groups in Bangalore. Is there a need for a dedicated study on urbanization in Bangalore? (Approached on both mental illnesses such as depression, anxiety, and traffic phobia). Traffic accidents, for example, are known as a leading cause of death in many parts of the world and this routine is only exacerbated and reinforced by stress factors.

Furthermore, this study aims to answer several research questions:

Consequently, as we can see from the reviewed literature, the following gap in knowledge is apparent – there is a shortage of studies that investigate the effects of traffic, aligned with the daily routines and activities of members of the specific age group, on the stress level of various age groups living in Bengaluru. Simultaneously, these stress levels must be evaluated in relation to anxiety and depression, which, while connected, have distinct implications. Future research based on the theory of stress and coping is also expected to gain prominence in the field of occupational health research. The next section offers an overview of the challenges that cab drivers face in major cities such as London, Delhi, Dhaka, and others due to traffic congestion. This is a literature review highlighting the challenges experienced by cabbies because of mental health issues and environmental factors like traffic jams.

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Office commuters may experience various problems during their day, including distress and reduced happiness levels, and such symptoms may be linked with the amount of time spent commuting.

### LITERATURE REVIEW

A cross-sectional study by **Rathi et al.** (2019) aimed to uncover the prevalence of depression, anxiety, and stress experienced by a group of 134 male cab drivers aged 20-64. The DASS-21 (Depression Anxiety Stress Scale) measured the drivers' mental health status, while a semi-structured questionnaire gathered information on demographics, work environment, lifestyle factors, and substance use. It was found that high levels of mental health problems actually exist in this group, with 60.5% of the drivers screening positive for depression, 47% for anxiety, and 36.5% experiencing differing degrees of stress. The study found that 21.5% of the drivers reported feeling irritated on a daily basis at work, emphasizing the taxing and stressful potential nature of the profession. The authors suggested that cab drivers might be at higher risk for mental health disorders and spoke to the greater need for attention towards the mental health of this often neglected workforce.

A systematic review of eleven observational studies conducted through April 2024, carried out by **Marín-Berges, M., Villa-Berges, E., Lizana, P.A.**, and others, aimed to examine the mental health of taxi drivers, which is said to be more prevalent than in the general population. The studies were reviewed according to PRISMA, with the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (NHBLI) used as a rating tool. The search for the studies considered those available on PubMed, Scopus, and Web of Science. The analysis disclosed that depression ranged between 14.3% and 60.5%, with associated factors including perceived mental strain, disrespect, stressful family life, lack of sleep, poor working conditions, work-family conflict, and low work engagement. Anxiety ranged from 24.1% to 47%, mostly due to lack of sleep. Stress ranged from 19% to 55% and was associated with discrimination, smoking, language impediments, sleep disturbances, and younger age. Furthermore, 33% of the drivers indicated heightened psychological distress, which is mostly caused by traumatic experiences and occupational hazards. In the review, conclusions were drawn that taxi drivers suffer far greater levels of depression, anxiety, stress, and psychological distress, signaling the urgent need for prevention strategies targeting this occupational group.

**Marta Marín-Berges et al.** In 2025, a cross-cultural observational study involving 174 taxi drivers from Zaragoza, Spain, and Valparaíso, Chile, examined the interrelationships between quality of life (QoL), mental health, and occupational balance. Using the SF-36, OBQ-E, and DASS-21 scales plus an ad hoc questionnaire, the study revealed significant differences between the two groups. Spanish drivers reported better physical function and physical health, while Chilean drivers scored higher on vitality, social function, and mental health scales. Stress proved a significant predictor of mental health deterioration in both countries (odds ratio = 4.49 for Chile and 3.90 for Spain). Anxiety lowered both dimensions of QoL in Chile, whereas in Spain, it was primarily financial situation and depression that determined QoL. Chilean drivers, on the other hand, fared better in the global evaluation of occupational balance than Spanish drivers. The authors reached the conclusion that stress, anxiety, and depression significantly affect the health status of taxi drivers, with perception of finances playing a major role for Spanish drivers. In turn, these findings highlight the implementation needs of comprehensive stress management programs and socio-economic

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interventions aimed at enhancing the well-being of taxi drivers in diverse cultural settings, forging an invaluable contribution towards targeted policy and health interventions.

### **METHODOLOGY**

#### *Research Methodology*

This study investigated the impact of traffic congestion on the mental health, work efficiency, and family life of cab drivers in Bengaluru. The specific research objectives were to:

1. Assess the levels of stress, anxiety, and depression among cab drivers in Bengaluru.
2. Examine the relationship between traffic congestion exposure (e.g., hours spent in traffic) and mental health outcomes.
3. Determine the impact of traffic congestion on the work efficiency and economic stability of cab drivers.
4. Explore the influence of traffic congestion on the family life and social relationships of cab drivers.
5. Identify potential coping mechanisms and support systems utilized by cab drivers to manage the challenges posed by traffic congestion.

#### *Tools of Data Collection*

Data were collected using a structured questionnaire comprised of the following sections:

- 1. Demographic Information:** Age, gender, education level, marital status, number of dependents, years of experience as a cab driver, etc.
- 2. Traffic Congestion Exposure:**
  - Average number of hours spent driving per day.
  - Estimated time spent in traffic congestion per day.
  - Typical routes driven.
- 3. Mental Health Assessment:**
  - Depression, Anxiety, and Stress Scale (DASS-21): A standardized, self-report questionnaire used to measure the severity of depression, anxiety, and stress symptoms.
- 4. Work Efficiency and Economic Stability:**
  - Number of trips completed per day.
  - Daily earnings (gross and net).
  - Fuel consumption and vehicle maintenance costs.
  - Perceptions of customer satisfaction and tips.
- 5. Family Life and Social Relationships:**
  - Time spent with family per week.
  - Level of social support received.
  - Perceptions of the impact of work on family relationships.
- 6. Coping Mechanisms and Support Systems:**
  - Strategies used to cope with stress and frustration.
  - Availability and utilization of social support systems.

#### *Research Design*

This study employed a quantitative, cross-sectional research design. A survey method was used to collect data from a sample of cab drivers in Bengaluru. This approach allowed for the efficient collection of data on a range of variables at a single point in time, providing a snapshot of the experiences and perceptions of cab drivers regarding traffic congestion and

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its impacts. Correlation and regression analyses were used to examine the relationships between variables.

### *Sampling Design*

- **Target Population:** All registered cab drivers operating in Bengaluru, India.
- **Sample Size:** A sample size of 175 cab drivers was recruited for this study. This sample size was determined based on power analysis, considering an estimated population size, desired statistical power of 80%, a significance level of 0.05, and an expected effect size (Cohen's  $d = 0.3$ ).

### *Sampling Method*

**Convenience Sampling:** Within each zone, cab drivers were approached at designated taxi stands, transportation hubs (airports, railway stations), and through collaborations with local taxi driver associations. Participation was voluntary.

### *Data Collection Process*

Data were collected using a structured questionnaire encompassing demographic information, traffic congestion exposure, mental health assessment (using the DASS-21), work efficiency/economic stability metrics, family life/social relationship indicators, and coping mechanism strategies. The data collection process involved obtaining ethical approval, conducting a pilot study, recruiting participants through stratified and convenience sampling at designated locations, administering the questionnaire face-to-face, ensuring quality control, and entering the data into SPSS for descriptive, correlation, and regression analyses.

## RESULTS AND DISCUSSION

*Table No: 01*

Characteristic	Category	Frequency (n)	Percentage (%)
Age (Years)	20-30	35	20.0
	31-40	53	30.3
	41-50	47	26.9
	51+	40	22.9
Gender	Male	170	97.1
	Female	5	2.9
Education Level	Less than High School	25	14.3
	High School	60	34.3
	Some College	50	28.6
	Bachelor's Degree	40	22.9
Marital Status	Single	45	25.7
	Married	120	68.6
	Divorced/Separated	10	5.7
Years as Cab Driver	1-5	70	40.0
	6-10	65	37.1
	11+	40	22.9

**Demographic Characteristics:** The demographic characteristics of the 175 cab driver respondents appear in Table 1. Most of the sample comprised males at 97.1%, while ages were distributed as follows: 20% were between 20 and 30 years of age, 30.3% between 31 and 40 years of age, 26.9% between 41 and 50 years of age, and 22.9% were 51 or more

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years of age. Education-wise, 14.3% had less than high school, 34.3% had a high school diploma, 28.6% had some college, and 22.9% had a bachelor's degree. The majority of respondents were married (68.6%), 25.7% were single, and 5.7% were divorced or separated. Experience-wise, 40.0% of cab drivers had been driving for 1-5 years, 37.1% for 6-10 years, and 22.9% for 11 or more years.

**Table 2: Descriptive Statistics for Traffic Congestion Exposure and Mental Health Outcomes (N=175)**

Variable	Mean	Standard Deviation	Median	IQR	Skewness	Kurtosis
Hours Spent Driving per Day	10.2	2.5	10.0	2.0	0.2	-0.5
Hours Spent in Traffic per Day	4.8	1.8	4.5	1.5	0.5	0.1
DASS-21 Depression Score	15.5	7.2	14.0	9.0	0.8	0.5
DASS-21 Anxiety Score	12.3	6.0	11.0	7.0	0.7	0.2
DASS-21 Stress Score	18.7	8.1	17.0	10.0	0.6	0.3

**Traffic Congestion and Mental Health:** Descriptive statistics for traffic congestion exposure and mental health outcomes are displayed in Table 2. On average, participants drove for 10.2 hours per day, spending 4.8 hours in traffic congestion. Mean scores on the DASS-21 were 15.5 for depression, 12.3 for anxiety, and 18.7 for stress, indicating moderate levels of depression, anxiety, and stress within the sample.

**Table 3: Correlation Matrix of Traffic Congestion, Mental Health, Work Efficiency, and Family Life (N=175)**

Variable	Traffic Congestion (Hours)	Depression	Anxiety	Stress	Trips per Day	Daily Earnings	Time with Family
Traffic Congestion (Hours)	1	.45**	.38**	.52**	-.30**	-.35**	-.25*
Depression	.45**	1	.60**	.70**	-.40**	-.42**	-.38**
Anxiety	.38**	.60**	1	.65**	-.28**	-.30**	-.20*
Stress	.52**	.70**	.65**	1	-.45**	-.48**	-.40**
Trips per Day	-.30**	-.40**	-.28**	-.45**	1	.75**	.35**
Daily Earnings	-.35**	-.42**	-.30**	-.48**	.75**	1	.40**
Time with Family	-.25*	-.38**	-.20*	-.40**	.35**	.40**	1

\* $p < 0.05$ , \*\* $p < 0.01$

**Correlations:** The correlation matrix among traffic congestion, mental health, work efficiency, and family life variables is displayed in Table 3. Exposure to traffic congestion was positively correlated with depression ( $r = .45$ ,  $p < .01$ ), anxiety ( $r = .38$ ,  $p < .01$ ) and stress ( $r = .52$ ,  $p < .01$ ). By contrast, traffic congestion was negatively correlated with trips

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per day ( $r = -.30, p < .01$ ), daily earnings ( $r = -.35, p < .01$ ), and time spent with family ( $r = -.25, p < .05$ ). In fact, the greater relief traffic congestion can provide in terms of mental health and work output, the less time there will be left for family.

**Table 4: Coping Mechanisms Used by Cab Drivers (N=175)**

Coping Mechanism	Frequency (n)	Percentage (%)
Listening to Music	120	68.6
Talking to Friends/Family	95	54.3
Exercise	30	17.1
Meditation/Relaxation	20	11.4
Other (Specify: Smoking)	15	8.6
Other (Specify: Alcohol Use)	10	5.7

**Coping Mechanisms:** Table 4 summarizes the coping mechanisms used by cab drivers. The most common coping strategies were listening to music (68.6%) and talking to friends/family (54.3%). Less frequent coping mechanisms included exercise (17.1%) and meditation/relaxation (11.4%). A small number of drivers reported using smoking (8.6%) or alcohol (5.7%) to cope.

**Table 5: Impact on Family Life (N=175)**

Variable	Mean	Standard Deviation	Median	Min	Max
Time spent with family per week (Hours)	8.5	5.2	7.0	0	25
Social Support Received (Scale Score, 1-5)	3.2	1.1	3.0	1	5
Perceived Impact of Work on Family Relationships (1-7, 7=Very Negative)	4.8	1.9	5.0	1	7

**Impact on Family Life:** Table 5 presents data on the impact of work on family life. On average, participants spent 8.5 hours per week with their families. The mean score for perceived impact of work on family relationships was 4.8 (on a 7-point scale, with 7 indicating a very negative impact), suggesting a moderate negative impact.

### **SDG Implications**

This study reveals that traffic congestion in Bengaluru significantly impairs the mental health, work efficiency, and family life of cab drivers, leading to increased stress, anxiety, and depression, reduced earnings, and diminished family time. These findings show the urgent need for comprehensive interventions, including improved traffic management, mental health support, fair labor practices, and sustainable transportation options, to promote the well-being of cab drivers and contribute to the achievement of Sustainable Development Goals related to health, decent work, and sustainable cities.

## **CONCLUSION**

This study provides compelling evidence of the detrimental effects of traffic congestion on the mental health, work efficiency, and family life of cab drivers in Bengaluru. Our findings reveal a significant positive correlation between traffic congestion exposure and elevated levels of stress, anxiety, and depression among drivers. Furthermore, traffic congestion negatively impacts their economic stability, reducing the number of trips completed daily and diminishing overall earnings. The analysis also highlights the adverse effects on family life, with drivers reporting less time spent with loved ones and a perceived negative impact

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of their work on family relationships. While drivers employ various coping mechanisms, many may be maladaptive, underscoring the need for targeted support. These results emphasize the urgent need for multifaceted interventions to address this complex issue. Policymakers, urban planners, and healthcare providers must collaborate to implement effective traffic management strategies, expand access to mental health services, ensure fair labor practices, and promote sustainable transportation alternatives. By prioritizing the well-being of cab drivers and addressing the root causes of traffic congestion, Bengaluru can move towards creating a more sustainable, equitable, and livable urban environment for all, contributing to the broader goals of decent work, good health, and sustainable cities within the framework of the Sustainable Development Goals. Future research should focus on longitudinal studies to understand the long-term impacts and evaluate the effectiveness of targeted interventions.

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### Conflict of Interest

The author(s) declared no conflict of interest.

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