Urban Parking Assessment along Major Commercial Corridors of Mahendranagar Bazaar

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Abstract

Effective parking management is crucial for sustainable urban mobility in rapidly growing cities like Mahendranagar Bazaar, Nepal. This study examines parking patterns, focusing on legal and illegal practices of two-wheelers and four-wheelers in the central commercial hub, and their impact on traffic congestion, safety, and urban infrastructure. Using fixed-period sampling over two days (working day and weekend) across five major lanes, data were collected at 1.5-hour intervals from 9:30 AM to 5:00 PM, recording vehicle types, parking legality, occupancy, and parking adequacy. A questionnaire survey complemented these observations, capturing user perspectives on behavior, awareness, enforcement, and safety. Findings reveal that while two-wheeler parking spaces are generally sufficient, illegal parking dominates, exceeding legal parking by 20–40% across most time slots, particularly on weekends, with parking adequacy reaching 250–330%. Four-wheelers and goods vehicles lack designated spaces, exacerbating congestion and safety risks. Key issues include poor signage, weak enforcement (only 18% of users fined), low awareness (16% unaware of legal zones), and miscommunication among authorities. The study recommends multi-level parking infrastructure, clear signage, smart parking technologies, enhanced enforcement, and public awareness campaigns to improve compliance and urban functionality. These strategies aim to reduce congestion, enhance safety, and support sustainable urban planning in Mahendranagar Bazaar, offering a replicable model for mid-sized Nepalese cities pursuing Sustainable Development Goals.

Keywords: *Urban Mobility, Illegal Parking, Two-wheelers, Traffic Congestion, Sustainable Transport, Mahendranagar*

Introduction

Urban areas in developing countries are increasingly facing pressure on transportation infrastructure due to the rapid rise in vehicle ownership. A key challenge arising from this trend is inadequate parking management, particularly in busy commercial zones (Wang et al., 2018). Mahendranagar Bazaar, a major economic centre in the Sudurpaschim Province of Nepal, is no exception. The unregulated growth in vehicle numbers, especially two-wheelers, has led to severe traffic congestion, illegal parking practices, and a lack of designated parking areas. This study observed the current parking situation in Mahendranagar Bazaar, analyzing legal versus illegal parking trends and offering practical recommendations to support better urban mobility and planning. Mahendranagar Bazaar serves as a central hub for business, trade, and public services, attracting a high volume of daily traffic. However, the rapid increase in vehicle ownership, particularly two-wheelers, has outpaced the development of parking infrastructure (Biswas et al., 2017). Most available parking spaces are informal, and illegal on-street parking is common. This not only disrupts traffic flow but also compromises pedestrian safety and reduces accessibility (Saad Yousif, 1999). Despite efforts by local authorities, a comprehensive and data-driven understanding of parking practices has been lacking, hindering effective planning and policy-making.

Parking management is a fundamental component of urban transportation planning, influencing traffic flow, safety, land use, and the overall functionality of cities (Berenger Vianna et al., 2004). In rapidly urbanizing regions such as Nepal, inefficient parking practices and limited infrastructure have become pressing concerns, especially in busy commercial centers like Mahendranagar Bazaar (Sigdel, 2023). Existing literature provides a robust foundation for understanding these challenges and points toward potential strategies for effective parking management. Urban parking is a critical component of transportation systems, directly influencing traffic congestion, road safety, and urban planning. Numerous studies have examined the dynamics of parking demand, parking behavior, and the impacts of on-street and off-street parking in various global contexts.

(Parmar et al., 2020) conducted a systematic literature review highlighting that user behavior, more than supply, influences parking dynamics. Their findings underscore that increasing parking supply often induces more vehicle use, thereby escalating congestion rather than resolving it. Additionally, car-sharing was identified as a strategy to reduce demand. A follow-up case study by the same authors (Parmar et al., 2020) evaluated parking characteristics in Delhi and revealed that even with adequate capacity, poor signage and bay markings lead to mis-management, suggesting a need for better policy frameworks and infrastructure optimization. In the context of traffic congestion, (Saad Yousif, 1999) examined the effects of on-street parking in Greater Manchester. Their observation-based study showed that vehicle maneuvers for parking significantly contribute to congestion, particularly under high traffic volumes. Furthermore, angled parking was found to be more disruptive than parallel parking, aligning with findings by (Biswas et al., 2017), who argued for restricting on-street parking on major roads and favoring parallel parking for safety. Advanced technologies also shape parking behaviours. (Sigdel, 2023) used an agent-based model to study autonomous vehicles (AVs) and their self-parking capabilities. While AVs promise efficiency, the study warned that private AVs (PAVs) might worsen congestion due to their attractiveness and increased road usage. This points to the complexity of integrating emerging technologies in traffic management without careful policy and behavioral considerations. Economic aspects of parking were explored by Fosgerau and de (Fosgerau & de Palma, 2013), who emphasized that optimal pricing can reduce congestion by encouraging trip retiming. Their findings revealed that setting workplace parking fees to zero during queuing periods maximizes efficiency—a valuable insight for urban pricing policies. From the user's perspective, (Sai Sneha et al., 2025) conducted a comprehensive survey in Texas and identified four main drivers of parking satisfaction: shorter search time, easy access, fair pricing, and enforcement of rules. They advocated for the use of real-time information systems and transparent pricing, similar to the conclusion reached by (Ahad & Kidwai, 2025b) in New Delhi, where 62% of drivers preferred mobile-based real-time parking information. Illegal parking remains a widespread issue in many urban centres. (Erfina et al., 2025), in their qualitative study using SWOT analysis and NVivo, they analyzed Indonesian urban areas and identified that weak enforcement and inadequate infrastructure contribute to poor parking management. Their innovative recommendation included integrating digital monitoring tools like CCTV and mobile applications to strengthen governance and planning. (Ahad & Kidwai, 2025a)developed a two-phase parking choice model linking parking search time with congestion. Their data showed that every additional minute of search increases congestion by approximately 3.2%, highlighting the importance of efficient parking allocation in traffic planning. In African contexts, (Geremew, 2024) studied Debre Markos Town in Ethiopia, revealing that on-street parking reduces road capacity and flow. The study recommended prohibiting on-street parking in key areas, using dead-end roads for short-term parking, and integrating parking management with urban planning.

In Nepal, several studies provide localized insight. (Biswas et al., 2017)critically reviewed on-street parking in urban areas and recommended restrictions on major roads. (Sigdel, 2023), through real-world observations in Kathmandu, emphasized that social behavior, rather than poor infrastructure alone, obstructs mobility. He identified habitual violations like lane disobedience and ignoring zebra crossings as culturally ingrained issues. (Pahari & Khanal, 2020) carried out field surveys in Kathmandu's New Road, a high-traffic area. Their results revealed over-capacity usage of on-street parking during weekdays. The study suggested developing multistory parking facilities to reduce street congestion recommendation echoed in multiple South Asian studies. In Birendranagar, (Khatiwada & Rokaya, 2023) evaluated parking demand, supply, and performance metrics using data-driven analysis. The study confirmed that parking efficiency and adequacy are key issues during peak hours, affecting traffic movement and urban planning. Lastly, (Khadka et al., 2021)provided qualitative evidence from heavy goods vehicle (HGV) drivers in Nepal. They found that weak enforcement, lack of parking areas, and industry-specific behavioral norms affect road safety. The study highlighted the need for designated HGV parking areas, training programs, and better enforcement of road laws.

A thorough review of the national and international literature reveals that while numerous studies have explored parking dynamics, traffic congestion, and user behavior, very few have addressed these issues in the context of smaller and mid-sized Nepalese cities, where informal urban growth and weak

institutional management dominate. Most existing works such as those by (Biswas et al., 2017; Pahari & Khanal, 2020; Sigdel, 2023) focus primarily on Kathmandu and other metropolitan areas. These studies emphasize the adverse effects of on-street parking on congestion and pedestrian safety but overlook the unique socio-behavioral and infrastructural conditions of emerging commercial hubs like Mahendranagar Bazaar, which lack formal parking governance mechanisms.

International research (e.g., (Ahad & Kidwai, 2025b; Erfina et al., 2025; Parmar et al., 2020)) highlights technological and policy interventions such as smart parking systems, enforcement mechanisms, and economic pricing models. However, such strategies are often designed for highly urbanized and technologically advanced contexts and do not account for the limited enforcement capacity, informal driving culture, and mixed-use commercial corridors typical of Nepalese secondary towns. Similarly, studies from Ethiopia (Geremew, 2024) and India (Ahad & Kidwai, 2025b) demonstrate the impact of on-street parking on road capacity but offer limited guidance for integrating behavioral and governance dimensions within local planning frameworks. In Nepal's case, there remains a critical research gap in quantifying the extent of illegal parking, understanding user awareness and compliance levels, and analyzing the interaction between parking adequacy, enforcement, and congestion in mid-tier cities. Existing national studies have not systematically compared legal versus illegal parking occupancy patterns using empirical field data or integrated user perceptions through surveys. The impetus for this research arises from the pressing requirement to tackle parking issues in Mahendranagar Bazaar. The existing absence of designated and effectively managed parking areas leads to rampant illegal parking, increased traffic congestion, and potential safety risks. Poor communication between local authorities and a lack of public awareness only exacerbate the situation. If prompt action is not taken, these challenges will persist and impede urban mobility and economic growth in the city. The present study addresses these gaps by conducting a comprehensive empirical analysis of parking behavior in Mahendranagar Bazaar, combining fixed-period field observations with questionnaire-based behavioral data. This dual approach allows for a nuanced understanding of both quantitative occupancy patterns and qualitative behavioral causes behind illegal parking. Moreover, it proposes context-specific recommendations such as multi-level parking facilities, real-time smart guidance, and community-based enforcement models suitable for resource-constrained urban environments. The research on parking in Mahendranagar Bazaar is constrained by its examination of only five commercial lanes, which may not accurately represent residential or outer areas, thus limiting its generalizability. The observation intervals of 1.5 hours could miss short-term changes in parking. Although the questionnaire survey included a range of respondents, it might not reflect the perspectives of long-distance travelers or urban planners, and there is a risk of bias in self-reported data. Limitations in resources hindered the use of GIS mapping or simulation modeling, which would have enabled a more detailed spatial analysis of parking density and traffic patterns.

Method

This study adopts a field-based empirical approach (Pahari & Khanal, 2020) to assess the parking conditions and challenges in the Mahendranagar Bazaar area of Kanchanpur, Nepal. The methodology includes site selection, direct observation, survey instruments, and statistical analysis to evaluate both legal and illegal parking behaviors across different times of the day.

Study Area

The research took place in Mahendranagar Bazaar, the economic heart of Bhimdatta Municipality in Sudurpaschim Province, Nepal. As the region's most bustling economic area, Mahendranagar Bazaar sees a significant amount of vehicle traffic, particularly from two-wheelers. The investigation targeted five major lanes (Galli No. 1 to 5), which are the most congested and commercially vibrant parts of the Bazaar. These locations were chosen because of their substantial parking needs, varied land uses, and the parking issues that have been noted.

Figure 1: Mahendranagar Bazaar showing legal and illegal parking areas

Data Collection Approach

Data collection was conducted over two full working days and one weekend day to capture both weekday and weekend variations in parking behavior, reflecting differences in commercial activity and travel demand patterns. Data collection was conducted over two full working days and the weekend to account for variations in parking patterns. Observations were made in 1.5-hour intervals between 9:30 AM and 5:00 PM, covering five distinct time slots. This interval-based approach was chosen to balance temporal accuracy and logistical feasibility, ensuring sufficient resolution to detect peak and off-peak fluctuations without introducing observer fatigue or redundancy in measurements. The 1.5-hour observation window aligns with similar empirical studies on urban parking dynamics (Biswas et al., 2017; Pahari & Khanal, 2020)where short-term variations in occupancy and turnover were effectively captured within a working day framework. Moreover, since parking turnover in commercial areas is generally moderate, this time interval was appropriate for identifying trends in parking sufficiency, illegal parking frequency, and occupancy distribution across different hours of the day. By including both weekdays and weekends, the study ensured a comprehensive understanding of temporal variations related to business density, visitor flow, and enforcement activity, enhancing the reliability and representativeness of the collected data.

At the beginning of each interval, field teams recorded the number of parked vehicles in each lane, differentiating between legal and illegal parking. Legal parking refers to the act of stopping or standing a vehicle within officially designated parking zones, as indicated by signage, pavement markings, or municipal authorization, without violating traffic flow or pedestrian pathways. Such spaces are typically identified by clear boundary lines, boards, or pay-and-park systems established by the local traffic authority or municipality. Vehicles parked within these demarcated spaces and complying with the local bylaws are considered legally parked. Illegal parking is defined as the stopping, standing, or parking of vehicles in areas not designated for parking or in violation of traffic control signs, signals, or road markings. This includes parking on footpaths, bicycle lanes, pedestrian crossings, near junctions, or along no-parking zones, where such behavior obstructs vehicle movement, pedestrian safety, or emergency access. Vehicles were categorized by type: motorcycles, cycles, rickshaws, cars, vans, trucks, and handcarts. Observations were conducted manually by trained members of the research group to ensure consistency and accuracy. In addition to the observational survey, a questionnaire-based survey was conducted to understand user behavior, perceptions of safety, and satisfaction with current parking facilities.

Sampling Method

A fixed-period sampling method was employed for the observation of parking occupancy and sufficiency. This method involved observing the same sites at regular intervals throughout the day to track changes in parking demand and vehicle turnover. The advantage of this method lies in its ability to identify peak hours, usage trends, and differences in legal versus illegal parking. For the questionnaire survey, a random sampling approach was adopted for this study. Respondents included vehicle users, primarily two-wheeler riders, pedestrians, and business owners within the Bazaar area. Interviews were conducted on-site, ensuring that the responses reflected real-time parking

experiences. Both closed- and open-ended questions were used to gather a mix of quantitative and qualitative data.

Tools Used

Several tools and methods were employed for data collection and analysis:

Fixed-Period Sampling

This method involved repeated manual counting of parked vehicles at fixed time intervals. It was effective in capturing the dynamic nature of parking occupancy and identifying peak usage times.

Parking Count Sheets

Standardized data sheets were used to record the number, type, and legality of parked vehicles. These sheets enabled consistent data recording across the five study lanes and different time intervals.

Questionnaire Survey

A structured questionnaire was designed with both closed-ended (e.g., yes/no, multiple choice) and open-ended questions. Topics included awareness of parking rules, frequency of fines, satisfaction with available parking, safety concerns, and suggestions for improvement.

Data Analysis Tools

- Collected data were analysed using Microsoft Excel, where calculations for:
- Parking Sufficiency = (Total Legal Parking Spaces / Total Parked Vehicles) × 100
- Parking Occupancy = (Total Parked Vehicles / Total Legal Parking Spaces) × 100
- probability density function (PDF) of a normal distribution is defined as:
- $f(x) = \frac{1}{\sigma\sqrt{2\pi}}\ e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$
- x = value (e.g., number of parked vehicles)
- μ = mean (average) of the dataset
- $\mu = \frac{\sum x_i}{n}$
- σ = standard deviation of the dataset
- $\sigma = \sqrt{\frac{1}{n}\sum(x_i - \mu)^2}$

These metrics helped quantify the extent of over-occupancy, illegal parking, and temporal variations.

Results and Discussion

This section outlines the key results from the field survey and stakeholder questionnaire, emphasizing parking occupancy, usage trends, legal versus illegal practices, and their wider implications on traffic, the environment, and urban management. The analysis is based on data collected over a two-day period and accurately represents parking conditions in five bustling lanes of Mahendranagar Bazaar.

Parking Occupancy & Patterns

In Mahendranagar Bazaar, parking spaces are predominantly occupied by two-wheelers, notably motorcycles and bicycles, with a peak count of approximately 2,070 vehicles against an estimated capacity of 2,400 as shown in Figure 2. Figure 2 illustrates the peak vehicle counts, showing two-wheelers dominating with 2,070 vehicles at peak times. This indicates sufficient parking availability, yet poor utilization due to widespread illegal parking practices. Occupancy patterns show significant temporal variations, with the highest density occurring between 11:00 AM and 3:30 PM, coinciding with peak commercial hours shown in Figure 3. Both weekdays and weekends exhibit predictable occupancy cycles, but illegal parking remains a persistent issue across all time slots, undermining efficient space use. Figure 3 shows higher weekend occupancy and illegal parking spikes, reinforcing the need for targeted interventions to manage demand and improve traffic flow. Figure 4 parking adequacy for Working Day and a Weekend Day displays parking adequacy, with weekend rates reaching 250–330%, highlighting overcrowding. Observations across five major lanes reveal that

legal parking zones are underutilized, while adjacent non-designated areas, such as pedestrian walkways and road edges, experience vehicle overflow. This behavioural disconnect likely stems from inadequate signage, limited accessibility to legal zones, or user preference for convenience, as drivers prioritize proximity to shops and businesses. The analysis of parking patterns highlights stark differences between weekdays and weekends. Additionally, real-time parking guidance systems, as suggested by (Ahad & Kidwai, 2025a) , could improve awareness and utilization of legal spaces. The data also point to the necessity of clear signage and better accessibility to designated zones to bridge the gap between availability and usage. By addressing these behavioral and infrastructural issues, Mahendranagar Bazaar can achieve more balanced parking distribution, reduce congestion, and enhance urban mobility, aligning with sustainable urban planning goals.

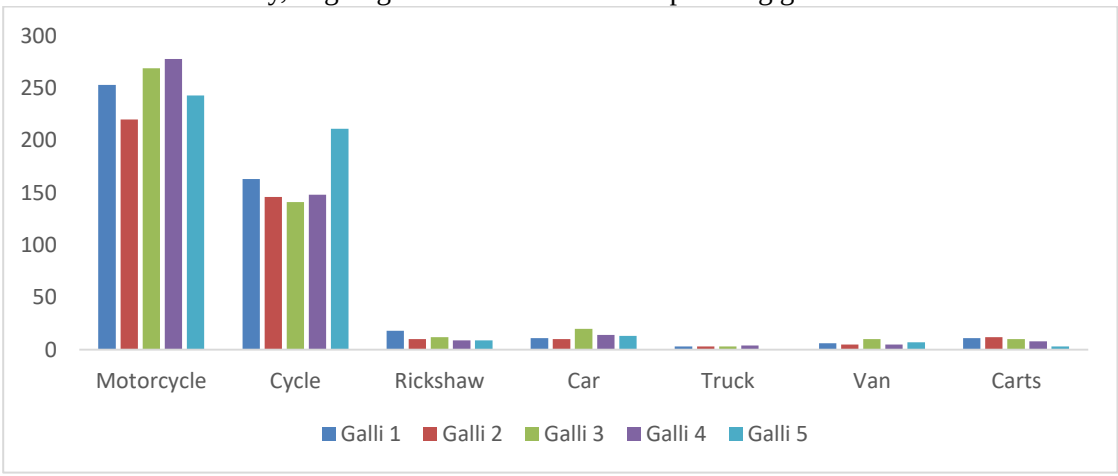


Figure 2: Maximum No. of Vehicles at Peak Occupancy

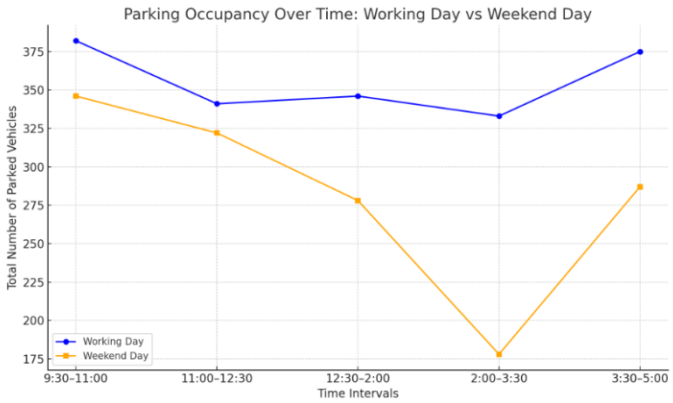


Figure 3: Comparing parking occupancy between a Working Day and a Weekend Day

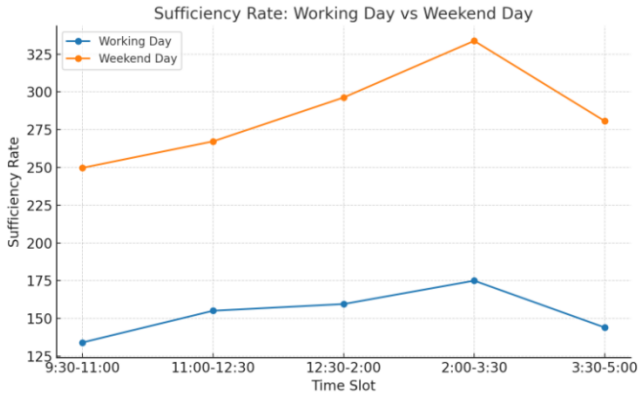


Figure 4: Sufficiency rate (parking adequacy) for a Working Day and a Weekend Day

Legal vs. Illegal Parking Rates

Data collected over the working day and weekend across five major lanes showed that illegal parking consistently outnumbered legal parking in nearly all time slots, with illegal motorcycles exceeding legal ones by 20–40% on average. The proportion of illegally parked vehicles was notably high. Across both observation days, illegal parking exceeded legal parking in nearly every time slot and location. Figure 5 shows vehicles haphazardly parked on pedestrian walkways and road edges in (a), highlighting congestion and safety issues, versus organized parking in designated zones in (b). Figure 5(a) shows the illegal parking zone, whereas Figure 56(b) shows the legal parking zone. The normal distribution analysis of parking rates further reinforces these trends. For legal parking, the distribution on working days is moderately concentrated around the mean occupancy, suggesting relatively stable demand throughout the day with predictable peak periods, as shown in Figure 6. In contrast, the weekend legal parking distribution is wider and skewed toward higher values, indicating more erratic usage and extreme demand spikes. Illegal parking distributions reveal even greater variability: working day illegal parking shows a narrow spread and lower peak values, whereas weekend illegal parking displays a broad, high-value distribution, confirming that excess demand is disproportionately absorbed by non-designated spaces during high-traffic periods Figure 7.

The comparative analysis of legal and illegal parking rates indicates a clear disparity in usage patterns between working days and weekends. On working days (see Figure 8), legal parking occupancy remained high, often nearing or exceeding 90% during peak periods, with illegal parking emerging primarily as a secondary effect when legal spaces were saturated. Weekend patterns (shown in Figure 9), however, exhibited a sharper contrast, with legal occupancy rates frequently surpassing 100% and illegal parking volumes exceeding legal usage during peak slots, particularly between 12:30 and 15:30. The prevalence of illegal parking on weekends highlights not only a capacity shortfall but also behavioural and enforcement challenges, where drivers often choose convenience over compliance and low monitoring intensity reduces deterrence. These findings are consistent with prior research by (Pahari & Khanal, 2020) and (Biswas et al., 2017), which reported that high-demand commercial districts with inadequate capacity experience predictable legal space saturation followed by rapid growth in illegal parking.

(a) (b)

Figure 5: Parking: (a) Illegal Parking in the Mahendranagar Bazaar area and (b) Legal Parking in the Mahendranagar Bazaar area

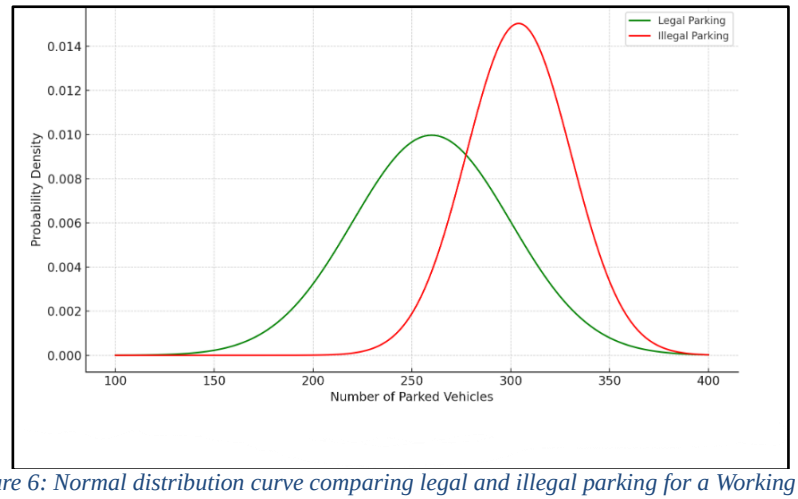


Figure 6: Normal distribution curve comparing legal and illegal parking for a Working day

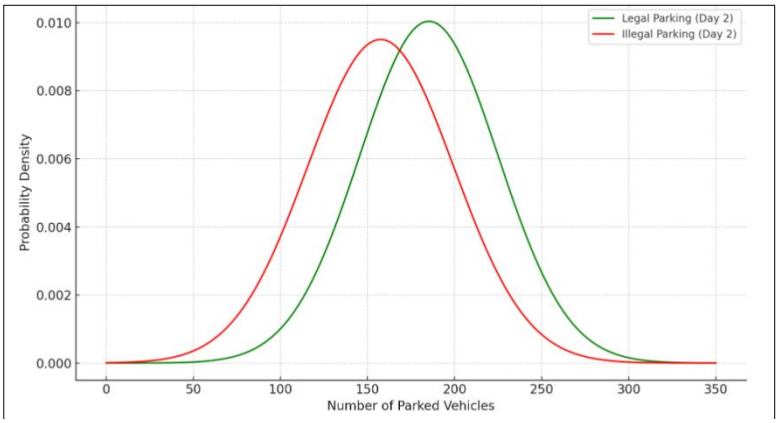


Figure 7: Normal distribution curve comparing legal and illegal parking for Weekend days

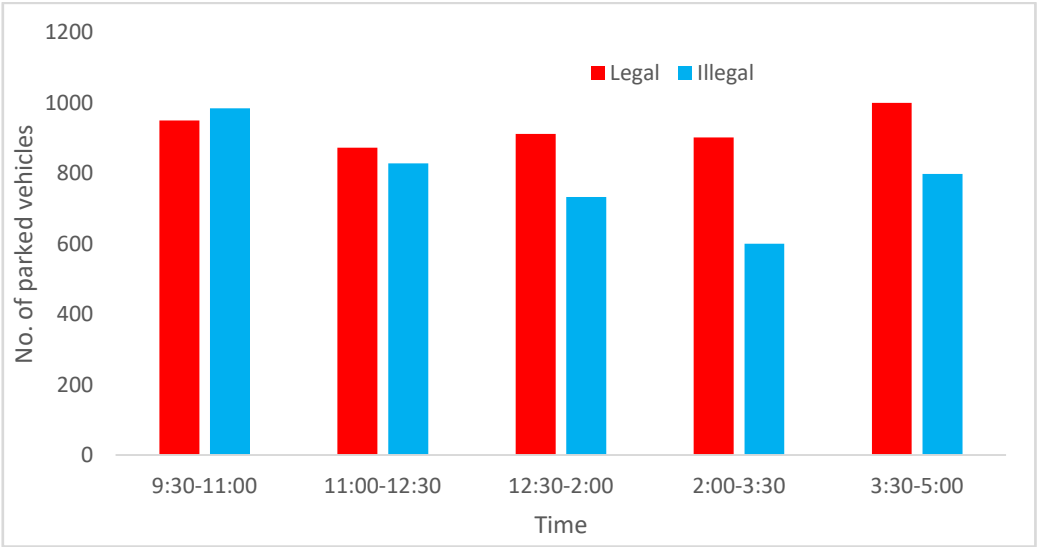


Figure 8: Legal Vs Illegal parking in working day

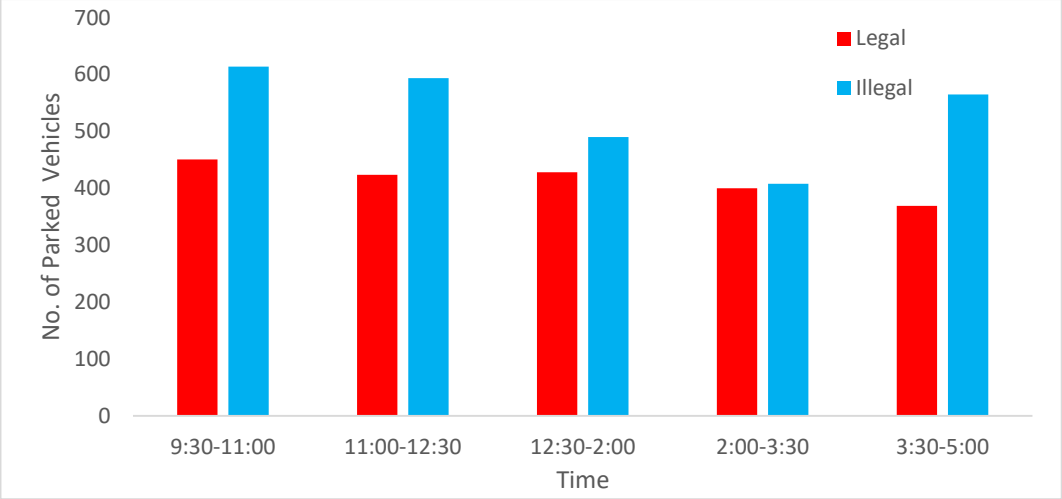


Figure 9: Legal Vs Illegal Parking Weekend

Impact on Traffic Congestion

Illegal and disorganized parking significantly exacerbates traffic congestion in Mahendranagar Bazaar, particularly during peak commercial hours from 11:00 AM to 3:30 PM. Indiscriminate parking by goods-carrying trucks, often during loading and unloading, creates substantial obstructions that severely impede smooth vehicular flow (see Figures 8 and 9). The narrow streets of the Bazaar, shared by motor vehicles, severely impede smooth vehicular flow (see Figure 10). Vehicles, bicycles, rickshaws, and pedestrians, become critically constrained when vehicles occupy non-designated areas such as pedestrian walkways, bicycle tracks and roadside junctions. This drastically reduces carriageway width, leading to bottlenecks, especially at intersections and market entry points as shown in Figure 11. These choke points disrupt traffic flow, cause delays for emergency services, and increase fuel consumption due to prolonged idling and slow movement. The absence of designated loading zones for trucks and inadequate enforcement further aggravate these issues, a pattern consistent with findings by (Geremew, 2024) and (Saad Yousif, 1999). As vehicle ownership continues to rise, the lack of strategic interventions threatens to worsen congestion, underscoring the urgent need for dedicated parking zones and robust enforcement mechanisms.

Questionnaire-Based Analysis

To enhance field observations with a focus on user perspectives, a carefully structured questionnaire was distributed among a varied group of vehicle users, business proprietors, and pedestrians in Mahendranagar Bazaar. The objective of the survey was to investigate views on parking practices, the effectiveness of enforcement, concerns about safety, and suggestions for improvements, employing both closed and open-ended questions. The findings provided crucial insights into parking behaviors and attitudes, revealing significant issues in infrastructure, enforcement, and awareness. About 84% of participants were familiar with designated parking spaces, while 16% were unaware, indicating potential problems with signage visibility or communication shown in Table 1. Importantly, 61% parked on the street, 27% utilized designated areas, and 12% parked wherever they could find space, suggesting a tendency toward convenience over compliance, likely stemming from insufficient enforcement or accessibility challenges. This pattern raises alarm, as 91% recognized that illegal parking considerably hinders traffic flow, demonstrating widespread public acknowledgment of its adverse effects, even among those contributing to the problem (Table 1). The enforcement issues were glaring: merely 18% of participants had ever received a parking citation, while 82% had not encountered any penalties, highlighting a lack of deterrence for illegal parking. Furthermore, 15% frequently observed traffic personnel monitoring the area, 62% saw them occasionally, and 23% never noticed any enforcement, which helps explain the continuation of illegal practices. Data on parking duration showed that 28% parked for less than an hour, 46% for one to three hours, 19% for three to six hours, and 7% for over six hours, reflecting the short-to-moderate parking needs of the commercial district. However, 53% frequently struggled to find parking, 29% experienced occasional

difficulties, and only 18% found it easy, indicating a disconnect between supply and demand, particularly during peak times. Safety concerns further discouraged legal parking usage: just 22% felt very safe using designated areas, 48% felt somewhat safe, and 30% felt unsafe, pointing to insufficient security measures such as lighting or CCTV. Public satisfaction was notably low, with 54% rating parking conditions as poor, 35% as good, and merely 11% as excellent, signaling an urgent need for comprehensive reform.

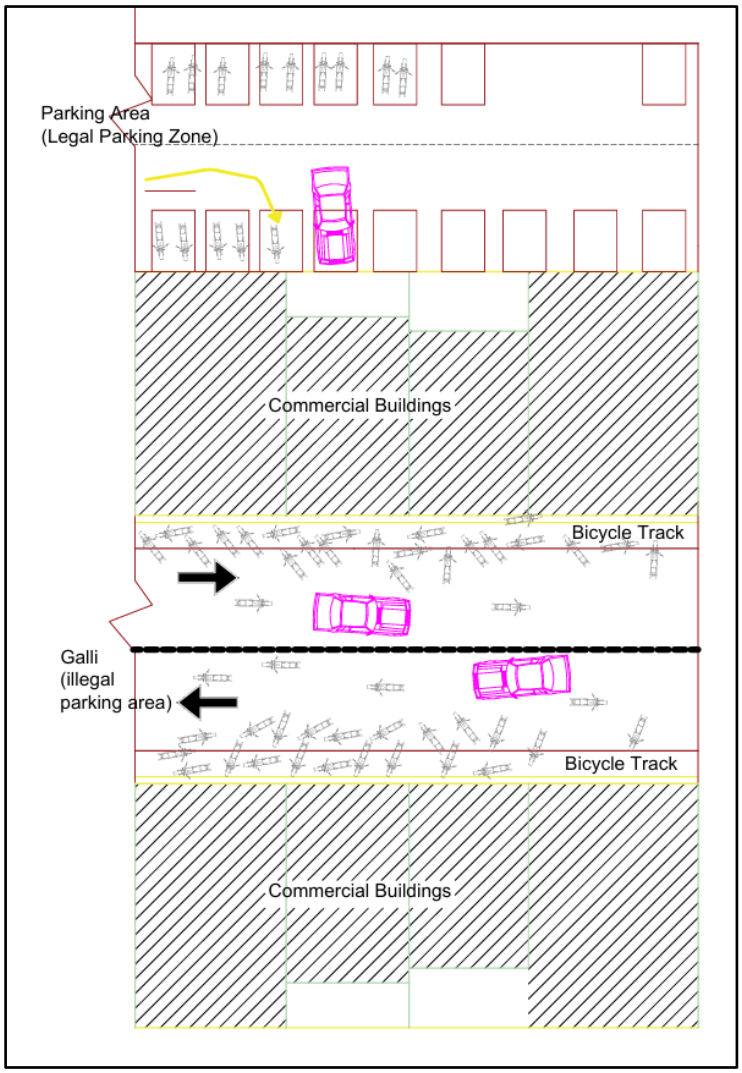
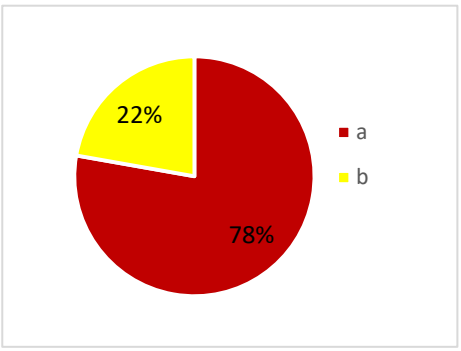
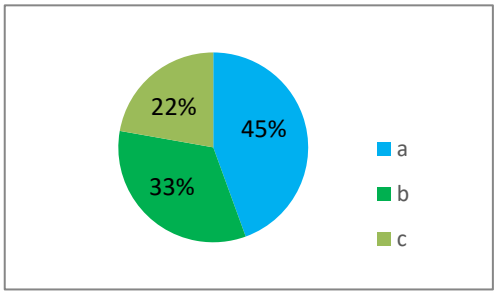
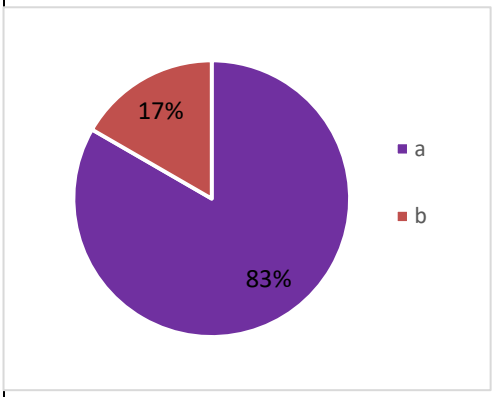
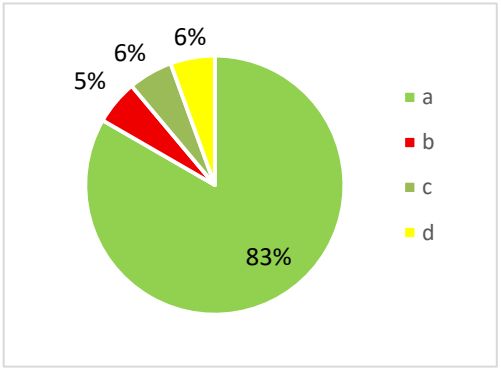
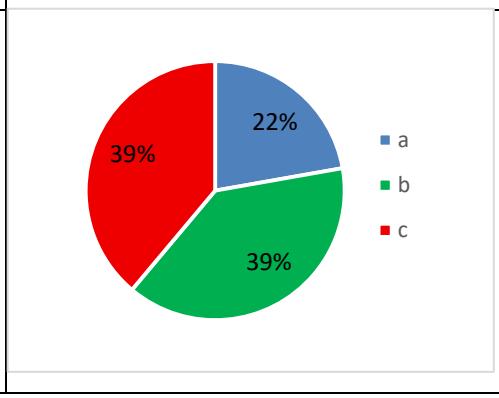


Figure 10: *Illustration of Legal and Illegal Parking Zones in an Urban Commercial Area of Mahendranagar, Nepal.*

Table 1: Usual Parking Practice of respondents in Mahendranagar Bazaar

(i) Are you familiar with the parking facility in the bazaar area? a) yes b) no	

(ii) Where do you usually park? a) on the street b) parking area c) anywhere	
(iii). Do you think illegal parking affects flow of traffic in the street? a) yes b) no	
(iv). For how long do you park your vehicle? a) <1hr. b) 1-3 hrs. c) 3-6hrs. d) >6hrs.	
(v). How much would you rate the parking status in the bazaar? a) excellent b) good c) poor	

Conclusion and Recommendation

The parking evaluation in Mahendranagar Bazaar was conducted through a combination of field observations and questionnaire surveys to capture both quantitative and behavioral aspects of parking practices. Observations were carried out over two working days and a weekend at 1.5-hour intervals between 9:30 AM and 5:00 PM to assess variations in occupancy and sufficiency rates across different time periods. Complementary questionnaire surveys were administered to vehicle users to evaluate awareness, compliance, and satisfaction with existing parking facilities. The parking

evaluation in Mahendranagar Bazaar reveals a notable disparity between the number of legal parking spaces available and the actual parking behaviors, with a significant occurrence of illegal parking, particularly among motorcycles and during weekends when occupancy rates surpass 250–330%. Despite an adequate number of designated motorcycle parking spaces, these areas remain underutilized due to inadequate signage, poor accessibility, and user preference for convenience. Conversely, the shortage of parking areas for four-wheeled vehicles and goods transport forces drivers to occupy pedestrian pathways, bicycle tracks, and road edges, aggravating congestion and compromising safety. Weak enforcement is indicated by only 18% of violators being ticketed, alongside a lack of public awareness (with 16% unaware of designated legal parking areas) and poor coordination among agencies, resulting in continued non-compliance. Additionally, the absence of a structured approach for managing loading and unloading of goods vehicles exacerbates congestion during peak business hours. These insights reflect the wider urban parking issues recognized in other cities across Nepal, emphasizing the necessity for integrated and evidence-based planning for urban mobility. Based on these outcomes, the study recommends establishing multi-level parking structures, dedicated loading/unloading zones, and smart parking systems to provide real-time information on space availability. Strengthened enforcement through regular monitoring, consistent penalty application, and awareness programs utilizing signage and digital media are essential for improving compliance. Integrating these measures into the municipal traffic management framework will support more efficient, safe, and sustainable urban mobility in Mahendranagar Bazaar.

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