Safety of Commercial Motorcycles

Guidelines and Good Practices for Governments and the Private Sector

GRSF
Global Road Safety Facility

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About GRSF

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Executive Summary

Globally, there are approximately 600-700 million motorized two-wheelers, growing by 3-5 per cent annually. In many developing countries, two-wheelers often outnumber four-wheelers, especially in urban areas. With the exponential growth of e-commerce, quick commerce and ride-hailing services, and flexible income opportunities, commercial motorcycles and motorized two-wheelers have proliferated worldwide. In both urban and rural areas, they provide reliable, affordable, and essential last mile access to markets, schools, hospitals, and offices. This has generated new employment opportunities, enhanced social mobility, and supported broader economic participation, particularly in low and middle-income countries (LMICs).

However, this rapid growth has also exacerbated the inherent safety risks associated with driving motorcycles, particularly in LMICs that already have a disproportionately high share of motorcycle crashes and fatalities. The informal transport and service economies—where commercial motorcyclists face tight delivery schedules, navigate unfamiliar routes, and experience fatigue—often operate without proper licensing, proper use of helmet and other safety gear, and adequate insurance, further amplifying the safety risks. The diverse business and governance structures involved in this sector—many without proper accountability of their fleet safety—as well as the diverse nature of services ranging from ride-hailing platforms to delivery service providers, and including cooperatives and franchise models, complicates their regulatory oversight.

Recognizing the indispensable role of commercial motorcycles in mobility and livelihoods, the World Bank's Global Road Safety Facility developed this guide to provide practical guidelines, good practices, and proven strategies to address common safety issues. Uniquely, it focuses on the safety of commercial motorcyclists—an increasingly large proportion of overall motorcycle users in LMICs—who face significantly higher risks of crashes and severe injuries than private-use motorcyclists due to longer hours on the road and higher daily exposure to traffic.

Drawing on wide stakeholder consultations and global case studies, the guide presents a multi-stakeholder, safe systems approach to commercial motorcycle safety that can be adapted around the world. Its insights are particularly relevant for policymakers, regulators, transport authorities, e-commerce companies/ride-hailing platforms, insurers, financial institutions, and rider associations.

The report highlights safety challenges across several areas and ways to address them. Key challenges include the limited availability and affordability of certified helmets, widespread counterfeit gear, and poor public awareness of helmet standards and proper usage. Riders juggling multiple platforms and shifts are more susceptible to fatigue and risky behavior. Motorcycle fleets often rely on vehicles that may not conform to adequate standards, with inconsistent safety features and limited periodic maintenance. Weak insurance enforcement, limited coverage for commercial use, socioeconomic barriers, and limited adoption of telematics to monitor safety performance further hinder safety efforts. For instance, in some countries, low-powered commercial use two-wheelers are exempt from standard two-wheeler regulations. Addressing these challenges is a shared responsibility requiring active participation from the government, companies, riders, and the insurance sector.

Governments can enforce periodic maintenance for commercial motorcycles, mandate minimum safety standards, and incentivize fleet renewal through subsidies, tax relief, or insurance discounts. They can also enforce helmet standards, strengthen helmet certification and labeling, and introduce subsidies to improve access to certified helmets; for instance, as shown in the report, Uganda and Tanzania allow drivers to pay for helmets in installments. Further, stipulating compulsory training or graduated licensing and standardizing licensing requirements and procedures across jurisdictions can reduce the prevalence of unlicensed riders. Implementing robust road safety enforcement strategies, such as demerit point systems, can incentivize safe driving behaviors among commercial riders.

Fleet operators or service providers can enhance rider safety by subsidizing or coordinating bulk purchases of certified helmets and safety gear, making equipment more affordable. In addition, they can leverage app-based safety reminders, fatigue alerts, feedback systems, and telematics to monitor behavior, encourage safe practices, and inform targeted training and policy improvements. Companies and platforms can provide subsidized insurance plans and encourage riders to join delivery driver consortiums to avail themselves of such plans, which can help create an adequate economic safety net in the event of crashes. Periodic and evidence-based driver training and passenger awareness programs can promote safety standards and help companies build a skilled, safety-conscious workforce, enhancing both service quality and passenger safety.

The insurance sector has a critical role to play by ensuring universal coverage and uptake through proven strategies: offer usage-based models, group plans for specific demographics, multi-year-bundled plans, and flexible payment options; use telematics to monitor riding behavior and conduct periodic risk assessments; provide incentives for safety improvements; and partner with transport authorities to promote best practices and insurance awareness, for example Rwanda's mandated insurance coverage for all commercial motorcyclists.

Finally, the guide outlines an implementation roadmap focused on financing, corporate responsibility, and regulatory reform, along with a model action plan to reduce motorcycle-related fatalities and injuries. Financing constraints for commercial motorcycles include high upfront costs, especially for electric two-wheelers; difficulty assessing creditworthiness, particularly for startups; and poor alignment between financing structures and safety compliance requirements. To address them, financing models should include flexible leases, loans, or hire-purchase agreements aligned with riders' income patterns and business models. To enhance affordability, financiers can reduce upfront costs through partnerships with manufacturers and fleet providers and include battery leasing or usage-based financing for electric motorcycles. Crucially, linking financing schemes with safety compliance—such as mandatory insurance and certified helmets—can enhance responsible motorcycle operations. Simplifying approval processes and offering borrower education on financial products can expand access and ensure informed participation in financing programs.

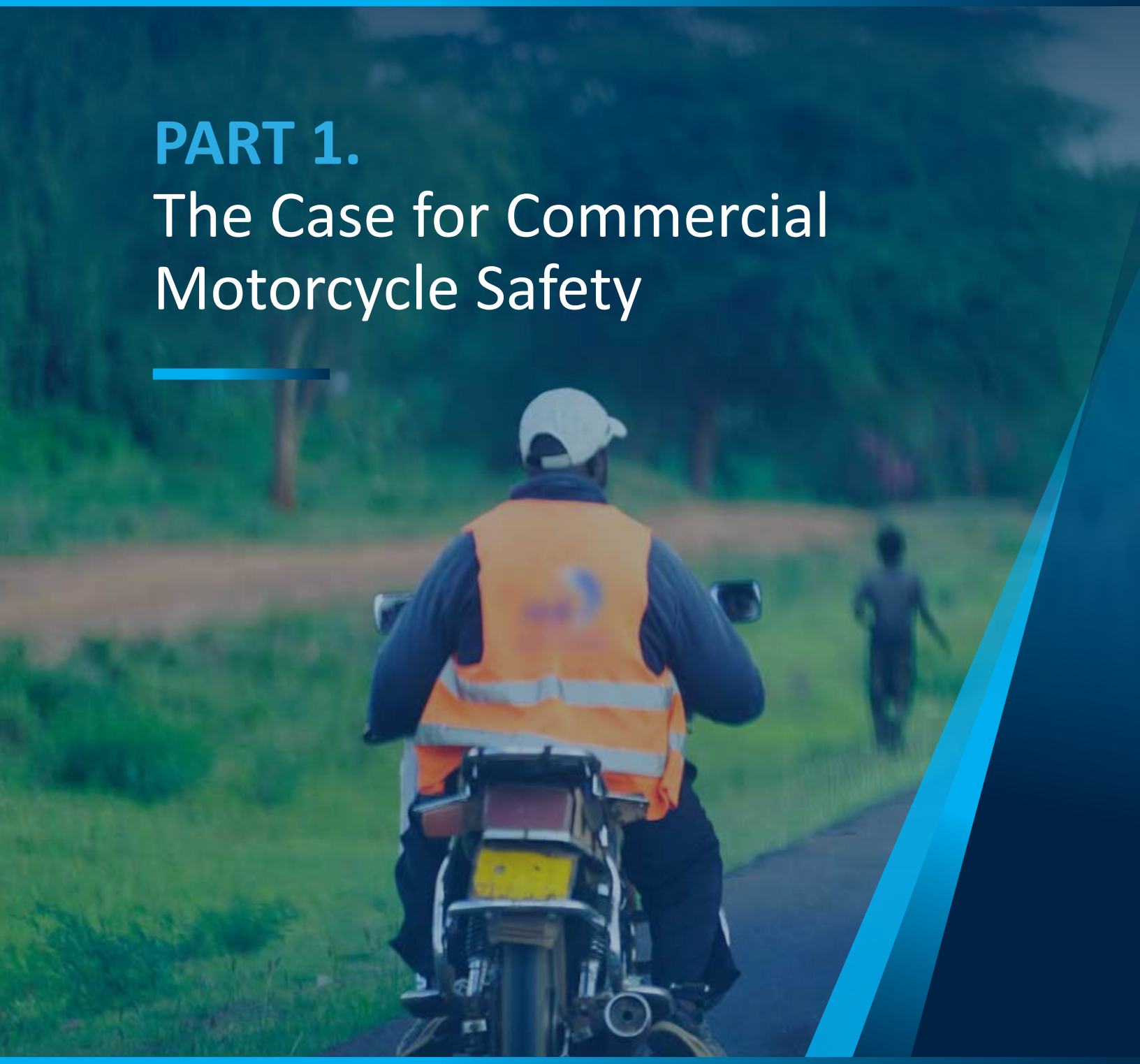
Corporate issues include aggressive delivery schedules prompting risky riding, high driver turnover due to informal employment, inadequate fitness testing, and limited integration of safety clauses in contracts. To enhance driver and passenger protection, customer satisfaction, and operational sustainability, corporate responsibilities should include structured hiring protocols with thorough background checks, skill assessments, and interviews, along with routine medical screenings and daily fitness declarations to ensure rider readiness. Contractual employees that drive commercial motorcycles must be aware of corporate safety obligations, including insurance and maintenance requirements. Additionally, formalizing the workforce through fair compensation, stable contracts, and incentives supports driver retention and encourages consistent safety compliance. Some ride-hailing companies already offer flexible work through independent contracting or fleet partnerships, employ women drivers, apply rigorous onboarding practices, and prioritize safety with insurance.

Important safety-related regulations include ambiguous worker classifications, inconsistent enforcement, limited motorcycle-friendly infrastructure, poor data and monitoring systems, and inadequate public awareness. To ensure the safety, compliance, and sustainability of commercial motorcycle services and their workers, regulations should establish a comprehensive legal framework covering worker classification, licensing, insurance, safety, and operational standards. For instance, California's legislation emphasizes safety and health of commercial motorcycle users and receive employee protections like workers' compensation, health benefits, and regulated work conditions, reducing vulnerability in a high-risk profession. Rwanda's focus on standardization, testing labs, and educational outreach offers a model for other nations grappling with rising motorcycle fleets.

Government agencies can bolster enforcement and incentivize safe driving through digital verification and real-time monitoring using telematics tools. Authorities should explore motorcycle-friendly road designs, dedicated lanes, and protective barriers, all of which can contribute to safer mobility. Policymakers should collaborate regularly with motorcycle associations, private sector stakeholders, and community groups to formulate responsive policies for the commercial motorcycle sector. In addition, public agencies should conduct sustained public education campaigns to promote safety compliance and the use of protective gear. Adopting a motorcycle safety action plan with tailored safety interventions and coordinated action between stakeholders is critical for creating a safer operational environment for commercial motorcyclists.

Commercial motorcycles are a vital component of modern urban and rural mobility, especially in LMICs, enabling livelihoods and economic inclusion. However, without targeted and coordinated safety interventions, their rapid growth poses escalating risks to riders and the public—including young and elderly pedestrians. This report outlines a practical, multi-stakeholder roadmap that aligns regulation, financing, technology, and behavioral change to create a safer and more sustainable commercial motorcycle ecosystem. Implementing the recommendations in this report can help governments, corporations, and communities realize the full benefits of commercial motorcycle services, safely and sustainably.

PART 1.
The Case for Commercial Motorcycle Safety



Chapter 1: Overview

Chapter summary

The global expansion of commercial motorcycles has transformed mobility, especially in congested urban and rural areas, providing affordable transport and employment opportunities. However, motorcycles now constitute nearly 30 percent of global road fatalities due to increased crash risks primarily associated with poor infrastructure, risky riding behaviors such as speeding and fatigue, inadequate helmet usage, and informal operational structures. These factors affect both commercial and private motorcyclists, amplifying overall road safety challenges. Additional concerns, such as limited insurance compliance and dependence on petrol-based motorcycles, further exacerbate safety and environmental issues. Addressing these challenges requires coordinated action by governments, businesses, and drivers to improve safety and sustainability.

Key challenges

Informal operations reduce accountability and hinder regulatory enforcement, encouraging risky behaviors such as speeding, distracted riding, and fatigue. Low compliance with helmet laws, widespread use of substandard helmets, and limited adoption of mandatory insurance significantly increase crash severity and post-crash burdens. Insufficient driver training, inadequate licensing, and poor road conditions further exacerbate these risks. Additionally, slow adoption of electric motorcycles prolongs environmental and sustainability challenges within the sector.

Practical recommendations

- Strengthen regulations: Establish clear legal frameworks with robust enforcement for helmet use, driver licensing, and mandatory insurance coverage.
- Enhance driver training: Implement compulsory, regular safety training emphasizing defensive riding, fatigue management, and adherence to traffic rules.
- Promote quality helmets: Increase accessibility and affordability of certified helmets through subsidies, bulk purchases, enforcement, and public education.

- Formalize operations: Gradually formalize employment structures to offer driver protections, stable incomes, and safety incentives, reducing turnover and risky behaviors.
- Support electric motorcycles: Incentivize transitions to electric fleets through financing solutions, infrastructure development, and targeted policies.
- Improve road infrastructure: Invest in safer road designs, dedicated motorcycle lanes, clear signage, improved intersections, and regular road maintenance.

Benefits to stakeholders

- Government can derive clear guidance to enhance regulatory frameworks, enforcement, and road safety infrastructure tailored for commercial motorcycles.
- Private sector can implement practical strategies to improve driver and passenger safety, formalize operations, and align business incentives with safety priorities.
- Drivers and passengers can factor in safety compliance, proper helmet use, and insurance coverage to reduce personal risks.
- Road safety advocates can work critical issues, strengthen advocacy efforts, and recommend targeted interventions to enhance motorcycle safety and sustainability.

1.1 Introduction

The number of powered two-wheelers, including low powered two-wheelers—generically referred to as motorcycles in this guide—has steadily increased globally, with a 10-percent rise between 2013 and 2016 (WHO, 2022). Motorcycles surpass 570 million across Africa, Asia, and Latin America (UNEP, 2023), comprising approximately 20 to 30 percent of the global motorized vehicle fleet (WHO, 2022). In many developing countries, motorcycles offer a fast, affordable, and efficient mobility alternative compared to walking, cycling, and cars. They frequently serve as the most practical mode of transportation for communities lacking adequate public transit infrastructure. Beyond general mobility, commercial motorcycles—particularly mototaxis—are increasingly utilized for transporting passengers, goods, and essential services. The widespread adoption of motorcycles as commercial vehicles highlights their critical role in urban and rural connectivity, significantly influencing daily travel patterns and economic activities in low and middle-income countries (LMICs).

Commercial motorcycle services, such as mototaxis, provide considerable economic benefits, especially in LMICs. These services function as critical sources of employment, offering job opportunities and livelihood improvements, particularly for young individuals. Mototaxi operations typically feature low entry barriers that require limited initial investment and few formal qualifications, making them highly accessible employment opportunities. For example, in Sub-Saharan Africa (SSA), mototaxi driving often serves as an entry point into the labor market for youth, generating stable and flexible incomes in contexts with limited formal employment opportunities. Additionally, mototaxis enhance accessibility to essential services such as healthcare, education, and markets. Consequently, they contribute positively to local economies by facilitating commerce and connectivity in regions with underdeveloped transportation systems (Sustainable Mobility for All, 2024).

However, despite these socioeconomic benefits, motorcycles pose considerable safety risks. Drivers face increased vulnerability to serious injury or death owing to perception errors, loss of control, inadequate road infrastructure, and minimal protective vehicle features. The severity of motorcycle-related injuries is further exacerbated by limited helmet usage, risky driver behaviors, and challenging crash circumstances., Targeted strategies and comprehensive safety guidance are imperative for managing associated risks effectively, given the growing reliance on motorcycles for mobility and economic livelihoods.

1.2 Rising popularity of commercial motorcycles

Commercial motorcycles are becoming increasingly popular owing to their ability to enhance accessibility to jobs and services. They provide an efficient means of reaching essential destinations like markets, schools, hospitals, and offices, especially in congested urban areas and on rural roads where other vehicles struggle. This makes them a crucial mode of transport in many regions. Additionally, commercial vehicles offer a cost-effective and time-saving alternative and complement last mile connectivity as well.

Commercial motorcycles have created millions of jobs and generated income, especially in areas with limited formal employment opportunities. Many young men, previously engaged in less profitable activities or unemployed, have turned to motorcycle riding as a part of a gig economy for a viable source of steady income and flexible work. The low barriers to entry and potential for higher earnings make this an attractive option. Drivers often work in the informal economy, either owning their motorcycles, renting them, or entering hire–purchase agreements.

Some of the most common commercial uses include: (i) delivery services, particularly for delivering goods such as food and parcels; (ii) courier services to transport documents and small packages quickly, especially in urban areas; (iii) ride-sharing and taxi services, as a form of public or paratransit transportation where passengers can hire a ride,

known as motorcycle taxis or boda bodas or okadas in some regions; (iv) touring and rentals rented out to tourists for sightseeing; (v) agricultural use to transport produce or farm equipment; (vi) law enforcement and emergency services, owing to their agility and speed, which can be crucial in emergency situations; and (vii) commercial fleets, including field services, sales, or technical support.

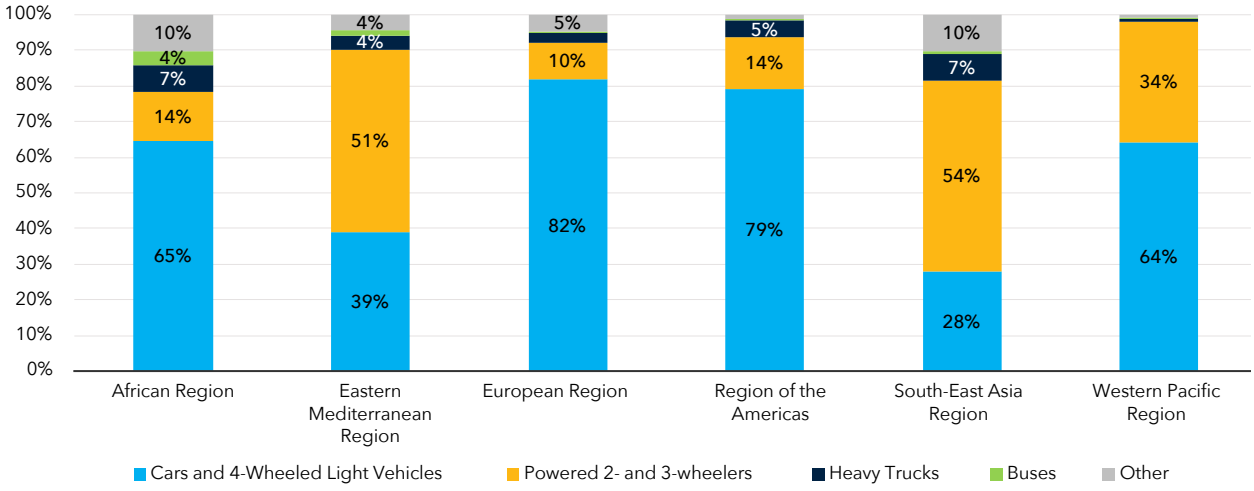
However, the rapid growth of commercial motorcycles has also engendered negative impacts. The proportion of motorcyclists among all road traffic fatalities has climbed to about 30 percent—an increase from nearly 23 percent in 2013 (WHO, 2023). In Africa alone, motorcycle-related deaths doubled between 2013 and 2023, while in the Americas they rose by about 67 percent over the same period (WHO, 2023). These trends reflect absolute increases in crashes and higher crash rates relative to overall motorcycle travel (WHO, 2022).

On the environmental side, most commercial fleets remain heavily reliant on petrol or diesel engines, leading to increased local air pollution, although a small but growing share of these fleets is electric in certain markets (UNEP, 2023). Notably, electric two- and three-wheelers already make up about seven percent of the nearly 490 million powered two- and three-wheelers in Asia but remain below one percent in Africa and Latin America—highlighting financing gaps, infrastructure challenges, and policy barriers (UNEP, 2023). To accelerate this transition, manufacturers should prioritize expanding production of affordable electric motorcycles designed specifically to accommodate two passengers comfortably and safely, addressing the operational needs of motorcycle taxi services prevalent in these regions. These trends underscore an urgent need for comprehensive interventions—from safer road design and expanded driver protections to targeted e-mobility policies—aimed at making commercial motorcycling safer and more sustainable.

1.3 Increasing numbers across the globe

Commercial motorcycles have become a ubiquitous presence in urban and rural areas worldwide. The South-East Asia region had the highest proportion of registered motorcycles in 2021, followed by the Eastern Mediterranean region and the Western Pacific region (Figure 1.1) (WHO, 2023).

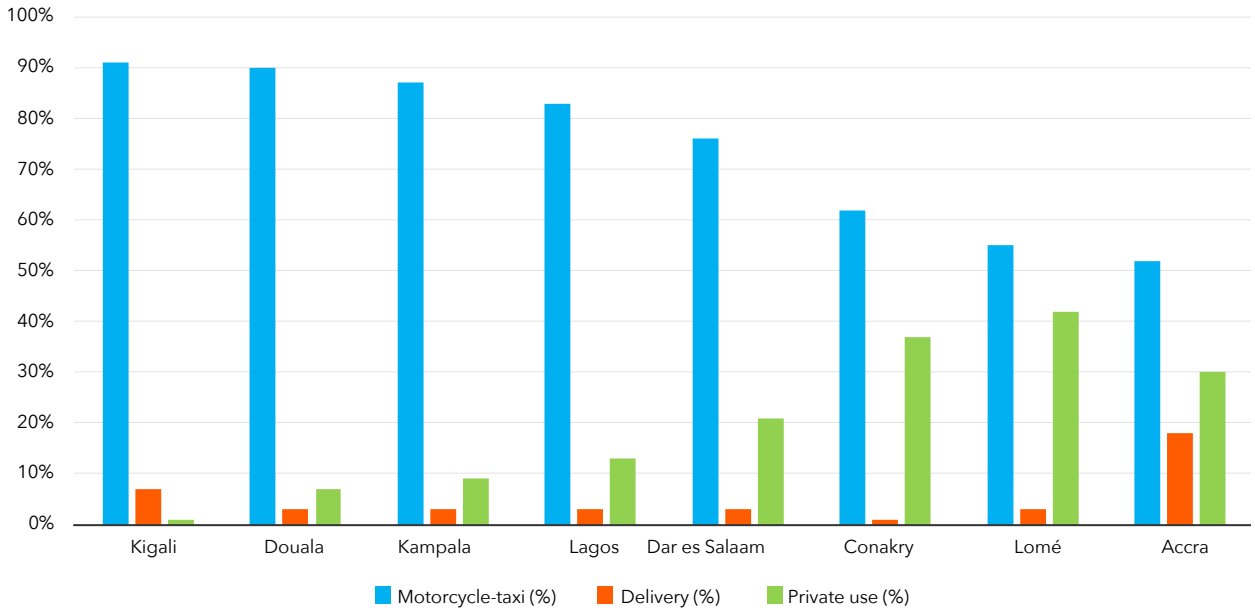
Figure 1.1. Global distribution of registered motorized vehicles.



Source: WHO. 2021.

However, the growth is not uniform across the world. The last decade has seen increased popularity of motorcycles in Africa, with an accelerated growth of 440 percent from 2010 to 2022, and an estimated 80 percent of these motorcycles were used for commercial purposes (Bishop and Courtright, 2022). Roadside surveys carried out by FIA Foundation in the largest cities of eight countries across Africa found that an overall average of three-quarters of all motorcycles observed were motorcycle-taxis, either carrying or seeking passengers. Five percent of motorcycles were observed as being used for deliveries and 20 percent being for private use as shown in **Figure 1.2**.

Figure 1.2. Types of use of motorcycles in surveyed cities.



Source: Bishop and Courtright. 2022.

1.4 Informal nature of commercial motorcycle operations

The rapid increase in commercial motorcycle usage, particularly in LMICs, has significantly boosted employment opportunities and economic activity. However, this expansion has predominantly emerged through various business models and informal operational frameworks, typically characterized by inadequate regulatory oversight. The diversity of these business structures and examples of entities involved in services are summarized in Table 1.1. These entities range from digital ride-hailing platforms and delivery service providers to local mototaxi cooperatives and franchise models, each highlighting unique operational dynamics within the broader informal economy.

Table 1.1: Types of private sector entities utilizing motorcycles commercially.

Types of Private Sector Entities	Examples	Description
Ride-hailing companies	Bolt, GRAB, Uber,	Platforms that connect drivers with commercial motorcyclists, positioning as technology providers
Delivery service providers	DoorDash, Grubhub, Glovo, Swiggy, Zomato	Motorcyclists employed deliver goods, enhancing convenience for consumers
Logistics and courier services	DHL, FedEx, local logistics firms	Motorcyclists employed for swift delivery of parcels and documents
Local moto-taxi services	Informal groups or cooperatives	Local transportation services within urban areas
Private owners	Individuals or small businesses	Owners of motorcycles who hire drivers to generate income, often through informal agreements
Franchise opportunities	Established companies	Franchise models for moto-taxi services, allowing independent operators to bear the brand name

Source: Author derived. 2025.

The commercial motorcycle sector often occupies an ambiguous intersection between formal and informal structures:

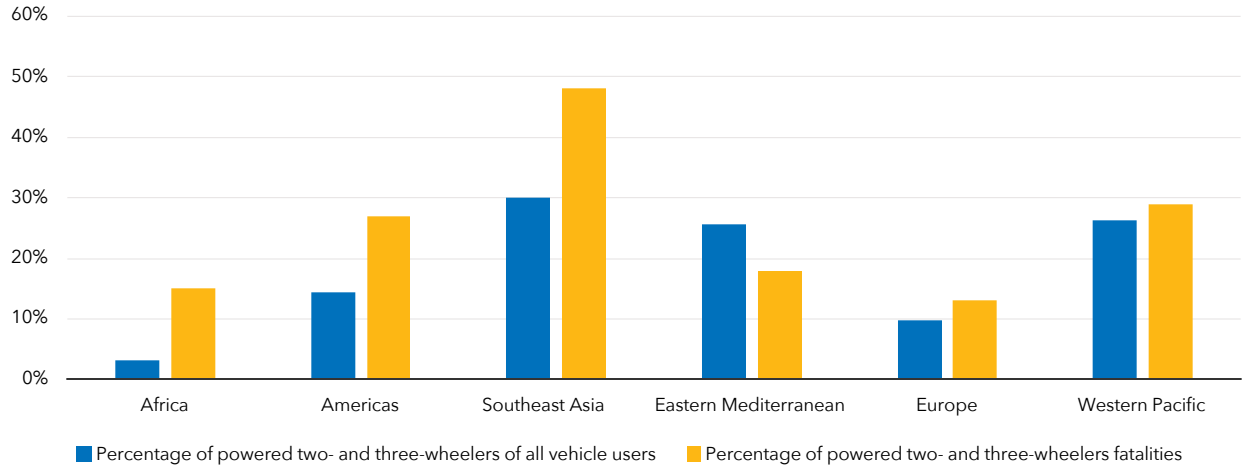
- Independent contractors: Most commercial motorcyclists operate as independent contractors rather than as employees. This arrangement impacts their access to benefits such as health insurance, paid leave, and safety training.
- Lack of accountability: Companies often disclaim liabilities related to safety protocols, leaving drivers without essential protections, such as training or insurance, which can affect overall safety standards.
- Regulatory challenges: The informal nature of commercial motorcycle operations complicates government oversight and enforcement of essential safety measures, including helmet laws, speed regulations and licensing provisions
- Economic necessity and high turnover: Commercial motorcycling often represents an economic necessity rather than a career choice. For instance, a 2024 Brazilian Center for Analysis and Planning (CEBRAP) study[1] in Brazil found that 54 percent of application-based motorcyclists relied exclusively on these platforms for their sole income-an increase from 52 percent in 2022. Moreover, 46 percent combined this work with other jobs, though this figure slightly decreased from 48 percent in 2022. Despite economic precarity, 75 percent of drivers intended to continue in platform-based work long term, although 22 percent actively sought alternative employment alongside their existing roles.
- Business incentives: The informal structure can lead to short-term earnings being prioritized over long-term safety investments, as drivers focused on maximizing trip volumes rather than adhering to regulatory compliance.
- Incremental improvements: Despite these challenges, initiatives such as mandatory insurance and registration for commercial fleets indicate potential for advancing toward a more formalized system. Implementing these measures not only ensures driver and passenger safety but can also enhance public trust in commercial motorcycle services.

This guide discusses in detail the rise of commercial motorcyclist services, highlighting the relationship between employment creation and the challenges posed by informal operations. This guide also explores how the private sector and industry can enhance business opportunities and safety. Although these services have integrated into the urban transport landscape, addressing regulatory gaps and ensuring the safety and rights of drivers remain important. A potential pathway could develop through private sector and government agencies' collaboration for a more formalized and responsible commercial motorcycle sector that benefits both drivers and the public.

1.5 Burden of injuries

The proportion of motorcycle fatalities in comparison to other road users has also risen with the increased use of motorcycles, making motorcyclists and other powered two- and three-wheeler drivers the riskiest road user group, representing 30 percent of global road traffic deaths (WHO, 2023). In almost all regions of the world, motorcycle drivers are disproportionately represented among road fatalities (**Figure 1.3**). While motorcycle drivers make up three to 30 percent of road users by region, they account for 13–48 percent of road fatalities (Global Alliance of NGOs for Road Safety, 2025). This significant disparity underscores the urgent need for improved safety measures and management in the sector.

Figure 1.3. Distribution of powered two- and three-wheelers' usage and fatalities.



Source: Global Alliance of NGOs for Road Safety. 2025.

Motorcycle crashes continue to place a significant strain on healthcare systems in LMICs, as indicated by recent FIA Foundation findings. For an in-depth illustration of this impact, see **Box 1.1**.

Box 1.1. A fair price: An investigation into the health costs of motorcycle taxi crashes in Kenya

In Kenya, the rapid growth of motorcycle taxis over the last two decades has resulted in 2.2 million registered commercial motorcycles, locally known as boda bodas, on the road. Kenyan citizens make over 22 million journeys daily, with drivers collectively earning more than USD100 million each day (Nyachieo and Kayi, 2022) providing an essential source of income, predominantly to men under 35. Motorcycle taxis have significantly transformed mobility in both rural and urban areas, offering more affordable access to essential services, education, and employment. However, this comes at a high cost, with an increasing risk to users' personal safety.

Motorcycle-related fatalities and injuries are on the rise, with motorcycle users accounting for 35% of all Kenyan road deaths in 2023. The national economic burden of motorcycle crashes is substantial, with road traffic injuries collectively costing approximately USD 6.5 billion. While low helmet use is a principal factor in these severe crash outcomes, the market itself is also saturated with substandard or counterfeit helmets. Stronger enforcement of Kenya's helmet legislation and tighter oversight of helmet standards could help overcome both problems.

Key study findings

- Head injuries are the leading cause of hospital admission among motorcycle crash victims, representing more than one-third (35%) of all injuries.
- Records from two hospitals in Nairobi showed nearly 1,000 individuals injured in motorcycle crashes over an 18-month period, with most victims under the age of 35 and boda boda operators (62%) more frequently injured than passengers.
- Six percent of victims lost their lives while undergoing treatment, though those who die at the scene are not captured in the records.
- Injuries to the head and limbs are most common, with 24% of patients experiencing multiple injury types. The mean hospital stay is 18.12 days, with almost 28% of patients spending more than three weeks in the hospital.
- The cost of treatment is generally passed on to patients, with those not covered by the National Health Insurance Fund (NHIF) often relying on loans from family and friends.
- The most expensive treatments relate to head and limb injuries, with personal testimonies revealing boda boda operators facing healthcare costs equal to 4.5 years' salary and many unable to return to work for over a year.

The helmet challenge: Usage and quality

Despite Kenya's robust legislation mandating helmets for both driver and passenger, actual helmet-wearing rates, especially for passengers, remain low. Equally concerning is the widespread availability of substandard and cheap helmets, which appeal to cost-conscious drivers. As a result, even those wearing helmets may not receive adequate protection in a crash.

Addressing these gaps will require:

- Stronger enforcement of existing helmet laws, ensuring that all drivers and passengers wear helmets on every trip.
- Improved supply of certified, affordable helmets meeting Kenyan Bureau of Standards requirements, so that more drivers can access quality headgear.
- Education and awareness campaigns, highlighting that merely wearing any helmet is not enough—the helmet must also meet recognized safety standards.

Source: Nyachiao, G., Wandera, V., Peden, M., and Clark, S. 2024. *A fare price: Health costs of motorcycle-taxi crashes in Kenya*. FIA Foundation / Transaid.

Reference

Nyachieo, G., and Kayi, C. 2022. *Gendered perspectives in mobility and safety in public transport: The case of motorcycle taxis (boda boda) in Kisumu City,Kenya*.

1.6 Critical issues for commercial motorcycles

Several critical issues significantly impact commercial motorcycles and road safety that warrant undivided attention. First, commercial motorcyclists, with their rising proportion and higher operational use, may be exposed to higher risks compared to private-use motorcyclists. Crash risk depends on several factors such as exposure hours, driver behavior and access to quality protective gear. Commercial motorcyclists are further disadvantaged as they spend more time in mixed traffic—sometimes even in poor weather or low-light conditions or on unfamiliar routes—and have delivery time or economic pressures that often trigger aggressive road behavior, or fatigue-related reduced reaction times. As such, this increased exposure necessitates targeted safety measures to protect these drivers.

Secondly, the type of helmet used significantly influences crash outcomes. Standardized helmets, especially full-face helmets, have been consistently shown to be the most effective, reducing the risk of fatality by approximately 37 percent and brain injury by up to 69 percent compared to no helmet use. Non-standard helmets, such as half-face or open-face types, offer substantially lower protection, reducing fatalities by only about 15 percent and brain injuries by approximately 47 percent compared to no helmet use. In contrast, drivers not wearing any helmet face a 300 percent increased risk of death and a significantly higher risk of severe brain injuries, extended hospital stays, and higher medical costs. These findings highlight the critical need for enforcing universal helmet laws, promoting standardized helmets, and conducting targeted public education campaigns to improve safety outcomes for commercial motorcycle drivers (Rosander et al., 2023; Anigh et al., 2022; Lam et al., 2020; Brockhus et al., 2023; Giri et al., 2023). However, in many low-income countries, proper legislation and the affordability and availability of safe, standardized helmets pose significant challenges, leading to the use of non-standard helmets that fail to prevent head injuries.

Thirdly, compulsory motor vehicle insurance plays a pivotal role in enhancing road safety and post-crash care, yet compliance and coverage remains weak, especially among motorcycles. For instance, in Colombia, 78 percent of motorcycles do not comply with mandatory insurance acquisition, despite motorcycles being highly involved in road crashes.

Lastly, the unregulated nature of commercial motorcycle use often results in inadequate driver training and licensing, limiting the ability to ensure motorcycle-specific safe driving skills. Additionally, ride-hailing applications introduce special challenges and distractions for motorcycle drivers—such as the need to frequently interact with smartphones—leading to distracted driving and risky behaviors. Also, unsafe of other larger vehicle drivers poses significant threat to motorcyclists. These combined factors create a hazardous environment for both drivers and other road users, highlighting the need for stringent safety measures, regulations, and innovative solutions to mitigate these risks and improve overall road safety.

The World Bank's Global Road Safety Facility (GRSF) developed this guide to address the critical issue of commercial motorcycle safety, which has become increasingly important due to the vehicle's rising demand in World Bank member countries. The guide primarily focuses on commercial motorcycles in rapidly growing urban settings. The guide is part of a global Advisory Services and Analytics (ASA) initiative that focuses on the development and implementation of innovative schemes that contribute toward the safety of commercial motorcyclists. This initiative aims to provide comprehensive advisory services to multiple countries in Asia, Africa, and Latin America, helping both the public and private sectors improve the regulatory framework related to the safety and management of commercially used motorcycles and ensure the safety of motorcyclists and their fleets. The GRSF aims to mitigate risks associated with commercial motorcycle use, enhance road safety, and ultimately save lives by addressing these critical issues.

1.7 Safe System approach

As multisectoral interventions are necessary to address the systemic risks associated with commercial motorcycle operations, a Safe System approach is necessary while adopting an implementation plan. The following summarizes the key principles of the Safe System approach:

- People make mistakes: The system recognizes that road users will make errors, and these errors should not lead to death or serious injury.
- People are vulnerable: The human body is limited to the impact it can tolerate. The system aims to manage interactions between road users, travel speeds, and roads to ensure that crashes do not result in death or serious injury.
- Shared responsibility: Both those who design and those who use the roads share the responsibility for preventing road crash deaths or injuries.
- Strengthening all parts of the system: Even if one part fails, the road user must still be protected. This involves safe roads, safe speeds, safe vehicles, and safe road users.

Each recommendation in the ensuing chapters—whether on corporate responsibilities (Chapter 9), government-led infrastructure strategies (Chapter 10), or helmet standards (Chapter 7)—reflects the Safe System principle of creating layered safety nets. The likelihood and severity of crashes decreases by ensuring that roads, vehicles, and user practices collectively accommodate human error. This holistic model is especially vital for commercial motorcyclists, who frequently ride in mixed traffic, under time constraints, and often in challenging environmental conditions.

1.8 Definition of driver and passenger used in this guide

A commercial motorcycle driver refers to an individual who uses a motorcycle to transport paying passengers as well as deliver goods such as food and packages. They offer quick navigation through congested urban areas, providing an efficient alternative for passenger transport and last-mile delivery services. They are subject to local laws and regulations, including requirements for licensing, insurance, and compliance with safety standards. In many LMICs, these drivers are integral to informal transportation and delivery systems.[2] A commercial motorcycle passenger refers to a person who rides usually on the back seat or pillion of a motorcycle, typically in a commercial setting where the motorcycle is used to transport individuals for a fee. In this context, the passenger is often a fare-paying customer utilizing motorcycle taxi services. Regulations regarding passengers may vary by region and can include rules about safety equipment, such as the required use of helmets. Collectively, the driver and the passenger on an additional seat, or pillion, are referred to as riders.

1.9 Users for this guide

This guide is designed to serve policy makers, transport authorities, ride-hailing companies, drivers' associations, financing institutions, and road safety advocates by offering a detailed framework to tackle the unique challenges associated with commercial motorcycles, particularly in urban settings. It outlines actionable strategies and best practices for improving safety through targeted interventions and collaborative efforts. The guide aims to create a safer and more sustainable transportation ecosystem by engaging with a wide range of stakeholders, including commercial motorcyclists, fleet operators, government agencies, insurance companies, and technology providers. Chapter 2 provides a detailed narrative review. Chapter 3 emphasizes the importance of driver and passenger safety and company responsibilities. Chapter 4 focuses on motorcycle specifications and selection for commercial use.

Chapter 5 details the role and benefits of motorcycle insurance in promoting road safety. Chapter 6 highlights the role of licensing and training. Chapter 7 outlines the importance of safe and certified helmets. Chapter 8 highlights financing commercial motorcyclists. Chapter 9 lists the company's role in hiring and managing motorcyclists. Chapter 10 outlines government responsibilities in regulating and overseeing motorcyclists and motorcycle services. Chapter 11 presents an action plan to enhance commercial motorcycle safety.

Notes

1. The information was extracted from the study on urban mobility and delivery logistics in Brazil, available at Cebrap
2. For instance, the "boda boda" in East Africa or "okada" in West Africa

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Chapter 2: Narratives and Research

Chapter summary

Motorcycles present significant road safety risks, especially in LMICs, where rapid growth and informal operations increase vulnerability. Globally, motorcyclists represent nearly 30 percent of road fatalities, disproportionately impacting commercial drivers due to risky behaviors, inadequate protective gear, fatigue, and poor infrastructure. Informal commercial operations often lack accountability, leading to limited training, low helmet use, minimal insurance coverage, and weak compliance with safety standards. Evidence shows helmet standards, compulsory driver training, enhanced vehicle safety, for example, anti-lock braking system (ABS), and safer infrastructure effectively reduce motorcycle fatalities. The recommendations posited in this chapter are drawn from research narratives.

Key challenges

Key challenges include informal motorcycle operations limiting accountability and compliance, prioritization of earnings over safety leading to speeding and poor helmet usage, inadequate driver training and licensing, poor passenger awareness low insurance coverage, fatigue, and substandard road infrastructure. Limited adoption of safety technologies, such as ABS, also heightens risk.

Practical recommendations

- Operations formalized: Establish clear frameworks for accountability and regulatory compliance in commercial motorcycle services.
- Helmet enforcement: Enforce mandatory use of certified full-face helmets, subsidize helmet costs, and raise public awareness.
- Compulsory training and licensing: Mandate accessible, tailored training for commercial drivers, and streamline licensing procedures with regular compliance checks.
- Insurance compliance: Implement mandatory insurance coverage to enhance financial protection post-crash.

- Infrastructure improvements: Develop motorcycle-friendly infrastructure including dedicated lanes, improved intersections, clear signage, and traffic-calming measures.
- Safety technologies: Require motorcycle safety features like ABS, and leverage telematics to monitor driver behavior and enforce compliance.

Benefits to stakeholders

This chapter helps stakeholders—including governments, policy makers, private sector entities, and safety advocates—understand motorcycle-related risks, critical challenges, and global safety trends. Recommendations and case studies provide evidence-based strategies to reduce crashes, inform interventions, strengthen regulatory frameworks, and enhance commercial motorcycle safety.

2.1 Introduction

Motorcycles are a high-risk mode of transportation, particularly in LMICs, where they are rapidly increasing in popularity. Commercial motorcyclists face heightened risks due to frequent travel and work conditions. This chapter examines the global issue of road traffic fatalities, particularly focusing on the increasing risk associated with motorcycles. The chapter analyzes various factors contributing to these fatalities, including driver behavior, environmental conditions, vehicle characteristics, and socioeconomic factors. It also explores the challenges faced in urban areas, where commercial motorcycle use is common and contributes to higher crash rates.

2.2 Global trends

Road traffic crashes result in 1.2 million fatalities per year and are the largest cause of death for young people aged between 5 and 29 globally, and the eighth cause of death for all ages. Although LMICs account for 60 percent of the world's registered vehicles, 92 percent of road deaths globally occur in LMICs. Until road crash risks can be substantially and sustainably reduced, the rapidly growing vehicle fleets, increase in infrastructure development, and urbanization in LMICs will inevitably see rise in road crash deaths and injuries.

Motorcycles are an important, rapidly rising, and yet vulnerable transportation mode in LMICs, with more than 500 million registered motorized two-wheelers globally and a steady growth of 60 to 70 million new motorcycle registrations annually. These figures may underestimate the challenges, given that many LMICs lack a proper vehicle registry and that many motorcycles are not being registered.

At the same time, motorcycles continue to be a high-risk travel mode with an estimated 3.4 million deaths from motorcycle crashes globally between 2008 and 2020. The WHO Global Road Safety Status Report (2023) highlights that 30 percent of all road traffic fatalities involve powered two- and three-wheelers, such as motorcycles, mopeds, or scooters. In some Asian and African countries, deaths of motorcycle users account for more than half of all road deaths.

Countries experiencing rapid increases in motorcycle fleets have also observed significant growth in motorcycle-related fatalities. For example, Ecuador saw a 123.7 percent rise in motorcycles accompanied by a 46.4 percent increase in fatalities. An Inter-American Development Bank (IDB) report (IDB, 2022) highlights that in 14 of 16 Latin American and Caribbean countries, motorcycle fleets grew faster than other vehicle categories, correlating closely with rising motorcycle deaths. Motorcycle users now constitute 59.2 percent of road fatalities in Colombia, 46 percent in Argentina, and 38 percent in El Salvador, suggesting a strong link between fleet composition and fatality rates. Similar patterns emerge in Asia. In India, motorcycles accounted for nearly 75 percent of the vehicle fleet by 2020, and motorcyclist fatalities increased steadily—from 34 percent of all road fatalities in 2013 to 40 percent in 2016, reaching approximately 45 percent by 2022—highlighting a consistent upward trend. Viet Nam, with more than 50 million motorcycles as of 2021, making it the highest share among vehicle types, reports that motorcycle violations cause roughly 70 percent of road crashes, and motorcyclists represent 90 percent of fatalities. Overall, evidence indicates that motorcycles pose significantly higher crash risks than other vehicles, estimated to be four times more dangerous than cars and ten times more dangerous than buses.

Commercial motorcyclists, representing an increasingly large proportion of motorcycle users in LMICs, face notably higher risks of crashes and severe injuries compared to private-use motorcyclists, with evidence suggesting this elevated risk persists even on a per-mile basis (Palacios, 2015; Wankie et al., 2021; Raga et al., 2023). While commercial motorcycle operations leverage inherent advantages of motorcycles—such as lower operational costs, ease of parking, and maneuverability through congested traffic—these same benefits heighten exposure to crash

risks. Work-related pressures incentivize risky riding behaviors, including speeding, lane-splitting, and frequent traffic violations, significantly raising crash risk per kilometer traveled (Kiwango et al., 2024; Olasinde and Oluwadiya, 2022). Additionally, long hours on the road often lead to driver fatigue, further exacerbating crash risks (Wankie et al., 2021; Zuma et al., 2021). Poor road infrastructure in LMICs compounds these risks, disproportionately impacting commercial drivers due to their extensive daily riding exposure (Zuma et al., 2021).

The severity of injuries among commercial motorcyclists also tends to be higher, primarily due to inadequate use of helmets and other protective equipment, resulting in increased occurrences of serious head and torso injuries and substantial economic burden from medical expenses and lost income (Moon et al., 2022; Oladeji et al., 2024; Adewoye et al., 2020; Champahom et al., 2021). In Tanzania, a motorcycle taxi rider reportedly has more than a 90% chance of severe injury or death over a ten-year period (Mbegu and Mjema, 2019). Targeted interventions would effectively address these challenges including stricter enforcement of traffic safety regulations, improved infrastructure designed specifically for motorcycle safety, comprehensive driver training programs, and policies aimed at mitigating fatigue and high-risk riding behaviors among commercial motorcyclists.

2.3 Research narratives of risk factors

General risk factors in motorcycle crashes

A detailed review of the available literature on driver characteristics, behavioral factors, environmental and road conditions, vehicle-related factors, and socioeconomic and cultural characteristics, as they relate to motorcyclists, identified key risks and informed preparation of this guide (Appendix B). The review highlighted that younger, male drivers and those with lower education and socioeconomic status are at high risk. Speeding, non-use of helmets, driving under the influence, and fatigue—especially among commercial motorcyclists—raise the crash risk. Poor road infrastructure, lighting, or delineation—along with the need for frequent maneuvers in dense urban traffic—magnify collision severity, particularly at night. Additionally, vehicle's age and maintenance, lack of advanced safety features, and higher engine capacity collectively affect motorcyclist safety, while sociocultural norms can reinforce unsafe behaviors.

Although some of these risk factors also apply to four-wheeled vehicles, research suggests that the smaller visual profile and reduced protective structures of motorcycles elevate both the likelihood and severity of crashes in the same conditions. As highlighted in Chapter 1, failures of perception and control—especially at intersections—often involve both car drivers and motorcyclists, yet the absence of a protective enclosure makes unsafe infrastructure or poor traffic layouts particularly hazardous for drivers. Literature on intersection conflicts indicates that misjudging motorcycle speed and distance frequently result in more severe injuries for motorcyclists than for car occupants. Consequently, while four-wheeled vehicles benefit from passive safety features such as airbags and crumple zones, motorcyclists experience disproportionately higher crash fatality risks whenever perception errors, inadequate road designs, or risky maneuvers coincide at junctions.

Role of other road users and single-vehicle motorcycle crashes

The behavior of other road users—particularly vehicle drivers and pedestrians—also significantly contributes to motorcycle crash risks. A critical behavioral pattern identified in research is the failure of four-wheeled vehicle drivers to detect motorcyclists, notably at intersections. This phenomenon, known as look-but-fail-to-see, occurs when drivers visually scan the environment yet fail to recognize motorcycles, substantially increasing collision risk (Tmejová et al., 2022). Pedestrian behavior further compounds these risks, especially in dense urban settings, through sudden road crossings without adequately checking for traffic or distractions due to mobile device usage. These behaviors

frequently force motorcyclists into abrupt evasive maneuvers, thus elevating the crash likelihood (Chakraborty and Maitra, 2024).

Despite the role other road users play, evidence consistently emphasizes that a considerable proportion of motorcycle crashes involve only the motorcycle itself, categorized as single-vehicle crashes. Predominantly caused by risky rider behaviors such as speeding, alcohol impairment, or loss of vehicle control, single-vehicle crashes are more prevalent on rural roads or nonurban environments, where speeds tend to be higher and road conditions less predictable (Tollazzi et al., 2025; Wang, 2022). Furthermore, collisions with fixed roadside hazards—such as rigid barriers, poles, and trees—markedly increase injury severity and fatality risks, underlining the critical need for improved road and roadside infrastructure design.

2.4 Challenges in cities

Under the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS), Johns Hopkins University has collected behavioral data from roadside observation and Vital Strategies has collated crash data from numerous cities across Asia, Africa, and Latin America. A recurring theme emerges in cities which permit commercial motorcycle services for both goods and passengers. Such cities tend to experience elevated crash involvement and higher motorcyclist fatality shares, compared to those that restrict or ban passenger transport.

For instance, Kampala in Uganda and Mombasa in Kenya allow passenger-carrying motorcycle taxis or boda bodas, which comprise a large proportion of traffic. In Kampala, motorcyclists account for nearly half of all road fatalities, reflecting both high exposures, as many users rely on motorcycles for public transport, and low helmet compliance. Similarly, in Mombasa, where commercial motorcycles are allowed everywhere except the city centers, commercial drivers frequently exceed posted speeds, increasing the risk of severe crashes. By contrast, Accra in Ghana and Addis Ababa in Ethiopia impose stricter rules—Accra prohibits carrying passengers, whereas Addis Ababa limits commercial use primarily to food delivery. These regulations appear correlated with lower motorcycle fatality shares—despite lingering issues such as speeding or helmet non-compliance.

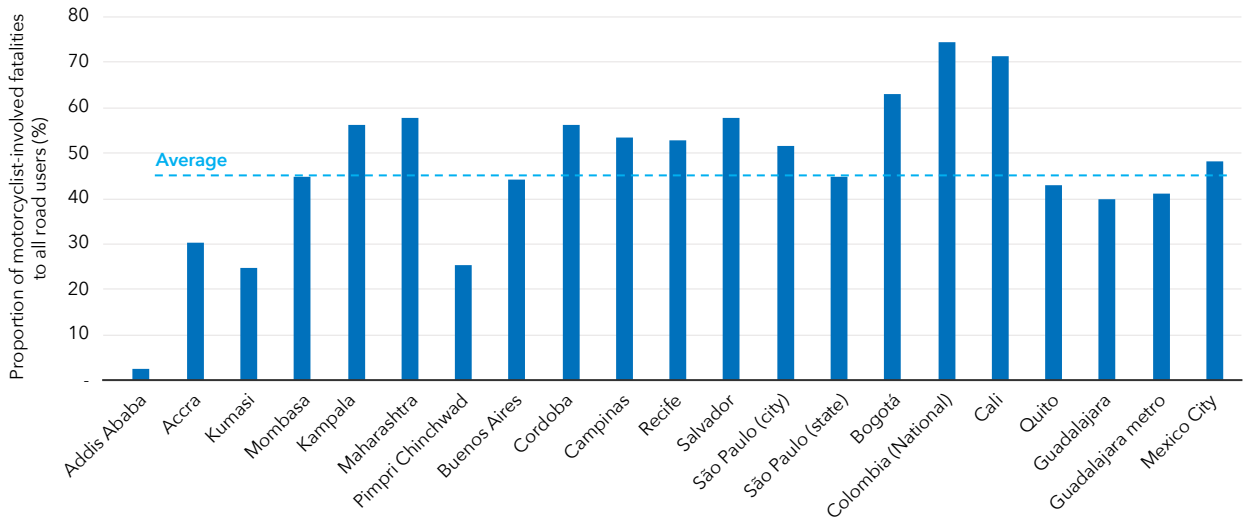
In Southeast Asian cities like Hanoi and Ho Chi Minh City in Viet Nam—where both goods and passenger services are widespread—motorcycle-related fatalities account for over 70 percent of total road deaths. The sheer volume of two-wheelers, combined with rapid urbanization and variable enforcement, further amplify the crash burden. The data underscore that commercial passenger carriage often leads to higher daily exposure, more frequent speeding—especially under delivery or passenger-quota pressures—and lower helmet-use rates contribute to a heightened risk profile.

These variations highlight the critical role of both regulatory frameworks and the built environment in urban motorcycle safety. In cities where commercial passenger transport by motorcycles is permitted, the policy and enforcement environment must be robust—emphasizing helmet laws, speed management, and adequate licensing—to counteract the inherently higher risk. However, regulation alone is insufficient without supportive built-environment interventions, such as dedicated motorcycle lanes where applicable, improved road surfaces, clear signage, and traffic-calming measures designed specifically to accommodate motorcycles safely, as highlighted in the infrastructure guideline notes in Section 10.6. Conversely, cities restricting passenger carriage generally see fewer fatal motorcycle crashes but built-environment challenges—such as poor road infrastructure, inadequate lane delineation, insufficient lighting, and unsafe intersections—combined with persistent speed violations and substandard helmet use can still significantly undermine overall safety (Wankie et al., 2021; Zuma et al., 2021; Kiwango et al., 2024). Comprehensive improvements in both regulatory policy and urban infrastructure are therefore essential to effectively enhance motorcycle safety in cities.

Motorcyclist fatalities

The percentage of motorcyclist fatalities compared to all road user fatalities varies significantly, ranging from two to 85 percent (Figure 2.1). This rate is particularly high in Southeast Asian cities, such as those in Viet Nam. On average, motorcycle-involved fatalities account for 45 percent of all road user fatalities.

Figure 2.1. The proportion of motorcyclist-involved fatalities by city (2019–2023).

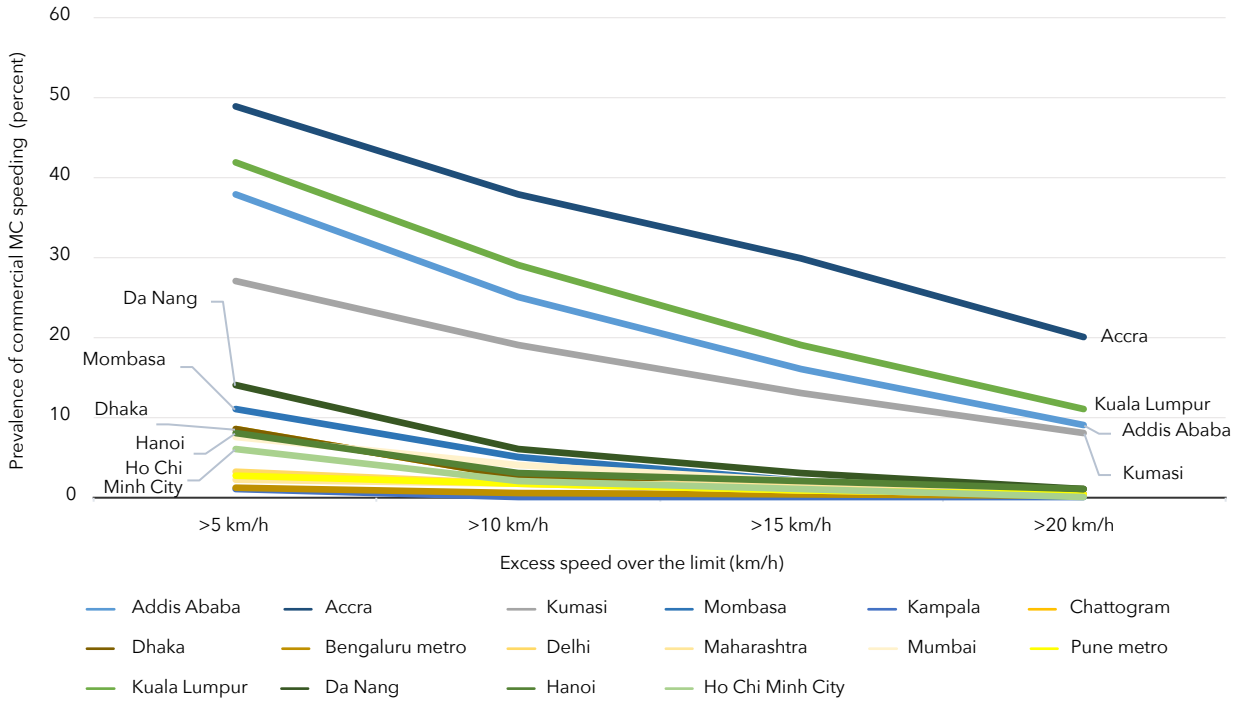


Source: Data collated by Vital Strategies. 2025.

Speeding

On local and collector roads, the 85th percentile speed of commercial motorcyclists exceeds 30 kilometers per hour in all cities, reaching up to 63 kilometers per hour. Additionally, the average rate of speeding over the limit among commercial motorcyclists is 28 percent. Figure 2.2 illustrates the extent of speeding by city. In some African cities, speeding more than 20 kilometers per hour over the limit has been observed. For instance, in Accra, speeding more than five kilometers per hour over the limit was seen in almost 50 percent of the cases and more than 20 kilometers per hour over the limit among 20 percent of all motorcycles, and speeding more than 20 kilometers per hour over the limit accounts for 20 percent of all speeding incidents. Conversely, in Asian cities, except for Kuala Lumpur, speeding more than 15 kilometers per hour over the limit was rarely observed (see Box 2.1).

Figure 2.2. Proportion of excess speeding over the limit by city between 2019-2023.



Source: Data provided by Johns Hopkins University. 2025.

Incorrect and poor helmet use rate

The data indicate a significant variation in incorrect helmet use rates, ranging from four percent to 65 percent, and averaging 25 percent by city. Additionally, the rate of no helmet use also varies by city, with figures ranging from one percent to 74 percent, and on average 22 percent. Notably, incorrect helmet use rate is generally higher among passengers compared to drivers.

Box 2.1. Systemic speed management for urban motorcycle safety

Although commercial motorcyclists are often the focus of speeding concerns in congested urban environments, the overall speeds of cars, trucks, and other vehicles also play a major role in elevating crash risks. By managing speed across the entire traffic system—not just among motorcycles—cities can reduce the frequency and severity of collisions. This approach mirrors the broad-based measures discussed in Chapter 9 regarding shared responsibility for speed compliance and in Chapter 10 on citywide infrastructure strategies.

For instance, instituting lower default speed limits on major urban corridors forces every road user, from personal cars to heavy trucks, to slow down. When paired with consistent enforcement—whether through visible policing or automated speed cameras—these uniform limits enhance predictability and give commercial drivers a safer margin for braking and maneuvering. Likewise, introducing traffic-calming features such as roundabouts, speed humps, or narrower lanes compels vehicles of all types to maintain moderate speeds. Such interventions protect not only motorcyclists but all vulnerable road users.

A critical component of systemic speed management is accurate, data-driven monitoring of average speeds across different vehicle classes. While motorcyclists are indeed at higher risk when they speed, equally high speeds among larger, heavier vehicles magnify that danger. By analyzing this cross-vehicle data, governments and enforcement agencies can identify corridors that most urgently need traffic-calming or stricter regulations. In line with the shared-responsibility model discussed earlier, city governments can work closely with ride-hailing and delivery platforms, ensuring that all commercial operators, not just motorcyclists, support efforts to keep velocities under safe thresholds.

Ultimately, addressing speeding in cities as a systemic challenge—rather than a motorcyclist-only problem—leads to a safer and more consistent traffic flow. If every mode is traveling within acceptable limits, then the margin for avoiding crashes or mitigating their severity significantly improves, directly benefiting commercial motorcycle drivers and all road users alike.

2.5 Impacts of commercial motorcycles on urban mobility and public transport

The rapid growth of commercial motorcycles, particularly motorcycle taxis, has significantly reshaped urban transportation systems, bringing both opportunities and notable negative impacts. While commercial motorcycles provide critical mobility services, their unchecked proliferation presents significant urban challenges. These effects manifest predominantly in traffic congestion, road safety risks, environmental pollution, and complex interactions with formal public transport systems such as bus rapid transit (BRT).

Traffic congestion and urban mobility

The proliferation of commercial motorcycles has exacerbated traffic congestion in many urban areas. In cities such as Hanoi, motorcycles dominate modal share, accounting for approximately 65 percent of traffic, resulting in disorganized road conditions and prolonged travel times (Ngoc et al., 2021). Similarly, in African cities like Lagos and Kampala, the influx of motorcycles overwhelms existing infrastructure, reducing overall mobility despite their flexibility in congested settings (Kumar, 2011; Saddier, 2025). Although motorcycles provide maneuverability advantages, their unpredictable movements often disrupt general traffic flow, particularly in dense urban cores, creating unsafe interactions with larger vehicles and pedestrians (Huyen and Tu, 2020).

Environmental and pollution concerns

Motorcycles significantly contribute to urban air and noise pollution, with serious implications for environmental sustainability and public health. Two-stroke engines common in many motorcycles are notably high polluters, emitting disproportionate levels of hydrocarbons, carbon monoxide, and particulate matter compared to four-stroke engines or electric alternatives (Leong et al., 2001). In urban contexts such as Bangkok and Kampala, motorcycles have significantly degraded air quality, exacerbating respiratory illnesses and adversely impacting urban livability (Muazu, 2019; Saddier, 2025). Interactions with public transportation systems. A critical area of concern is whether commercial motorcycles compete with or complement existing public transportation infrastructure, such as BRT. Literature presents nuanced perspectives, reflecting diverse regional experiences. In Kampala, Uganda, motorcycle taxis or boda bodas often play a complementary rather than competitive role relative to collective transport modes like minibuses, or matatus, and BRT. Detailed spatial–temporal analyses of nearly a million boda boda trips reveal a high level of multimodality, with motorcycles frequently bridging first mile and last mile connectivity gaps rather than fully substituting collective modes (Saddier, 2025). The evidence demonstrates that motorcycle taxis primarily complement collective transport during peak traffic periods, providing quicker alternatives in heavily congested urban centers and enhancing overall public transport accessibility (Irawan et al., 2019; Thaithatkul et al., 2023). However, despite these complementary roles, motorcycles occasionally replicate existing public transport services, particularly when public transport systems are underdeveloped or unreliable. This replication can undermine public transport viability by siphoning away users and revenues, further weakening already vulnerable transit systems (Ngoc et al., 2021).

Policy strategies should facilitate better integration between motorcycles and public transportation systems, leveraging motorcycles' strengths in enhancing first mile and last mile connectivity. Such integration can maximize efficiency, reduce redundant competition, and create a more coherent urban transport system. This approach has shown promising results in cities where motorcycle taxis have strategically complemented BRT services, notably boosting public transport ridership and enhancing overall mobility (Hung et al., 2024).

2.6 Implications of informality on commercial motorcycle safety

A key challenge transcending both urban and rural settings is the informal nature of many commercial motorcycle operations. Often functioning outside formal employer–employee relationships, drivers may lack stable wages, direct oversight, or legally mandated protections. This informality can exacerbate safety risks (Ávila et al., 2019; Olvera et al., 2016).

Economic necessity and high turnover

- Precarious work: Many commercial drivers choose this job due to limited employment alternatives, treating it as a temporary means to survive financially (Ávila et al., 2019).
- Fewer protections: The absence of formal contracts often translates to no health benefits or paid leave. Consequently, drivers may ignore safety measures—such as licensing or helmet use—to maintain income flow.

Regulatory and enforcement gaps

- Minimal oversight: Operating informally means many drivers remain unlicensed, untrained, and uninsured (Solomon, 2018; Temitope A.G., 2024). Authorities struggle to enforce traffic laws effectively, especially in rural or peri-urban zones with limited policing.
- Weak compliance: Studies from Nigeria to Tanzania indicate that without consistent checks or recognized employer structures, operators easily circumvent rules on speed limits, passenger loads, and helmet usage (Nguyen et al., 2018; Nambiza et al., 2025).

Environmental and public health impacts

- Pollution and strain on healthcare: Frequent reliance on older, poorly maintained motorcycles heightens emissions and noise pollution, affecting both drivers and communities (Ntramah et al., 2023).
- Occupational hazards: Long working hours in congested or dusty conditions lead to heightened exposure to injuries and illnesses, aggravating operators' vulnerability (Luambano, 2020).

Pathways to improvement

- Targeted interventions: Examples like helmet distribution drives, basic route-based policing, or partial licensing mandates can improve safety in both urban and rural contexts without requiring full formalization (Poudel et al., 2024; Zuma et al., 2021).
- Cooperatives and incremental regulation: Encouraging drivers to form cooperatives or associations can help pool resources for insurance, share best practices, and enable a gradual, step-by-step introduction of more formalized regulation (Lenshie et al., 2022).

Informality permeates the entire commercial motorcycle sector, from dense cities to remote areas. Left unaddressed, this dynamic complicates data collection, undermines law enforcement, and sustains risky behavior. However, pragmatic, incremental reforms—ranging from selective licensing and mandatory insurance to community-based training—can enhance safety outcomes and set a foundation for a more accountable, stable workforce.

2.7 Role of commercial motorcycles in employment

Economic factors driving young people to commercial motorcycle employment

Commercial motorcycle employment significantly addresses the critical issue of youth unemployment in LMICs, particularly in Sub-Saharan Africa. The primary driver behind young people's involvement in this sector is the widespread lack of formal employment opportunities. In Nigeria, the motorcycle taxi industry—commonly referred to as okada—has become a significant source of employment for young school leavers facing chronic unemployment (Ogunrinola, 2011; Abayomi, 2019; Bello et al., 2017; Temitope, 2024). Similarly, in Tanzania, the boda boda motorcycle taxi industry thrives largely due to limited formal employment, providing a critical fallback for youth lacking alternative opportunities (Mbegu and Mjema, 2019; Luambano et al., 2023).

Poverty further incentivizes young individuals to enter the commercial motorcycle sector, offering immediate means of economic survival and the potential to escape chronic poverty. For instance, Kenyan commercial motorcycle operators frequently earn sufficient income to meet daily expenses and invest in economic and human capital, despite associated occupational risks (Olvera et al., 2016; Owuor, 2018; Bore et al., 2024). This phenomenon is mirrored across other LMIC contexts, reflecting a broader reliance on CMC as a viable income source for those without formal education or specialized skills (Luvinga and Kilasara, 2020; Nyabuta and Muindi, 2018).

Additionally, the sector's low entry barriers facilitate rapid uptake among young, resource-constrained individuals. The relatively small initial investment—often achievable through renting or purchasing second-hand motorcycles—enables rapid business startup and income generation, thus attracting many young entrepreneurs (Ogunrinola, 2011; Luambano et al., 2023; Luvinga and Kilasara, 2020).

Benefits of the commercial motorcycle sector

The commercial motorcycle sector offers significant economic empowerment, providing consistent income that exceeds minimum wage levels in many instances. In Arusha, Tanzania, the commercial motorcycle business has demonstrated profitability, with benefit–cost ratios as high as 2.8, underscoring its economic viability (Luvinga and Kilasara, 2020). In Kenya, the boda boda sector alone directly employs over two million riders, indirectly benefiting approximately five million individuals (Bore et al., 2024). Similarly, in Uganda, this industry ranks second only to agriculture as a youth employment provider, significantly reducing unemployment rates and enhancing overall livelihoods (Amone, 2021).

Moreover, commercial motorcycle employment has catalyzed broader economic activities, creating jobs for mechanics, spare-parts dealers, and related service providers. This sector's growth has also contributed to enhanced social mobility, with earnings from motorcycle operations facilitating education and improving access to broader economic opportunities (Amone, 2021).

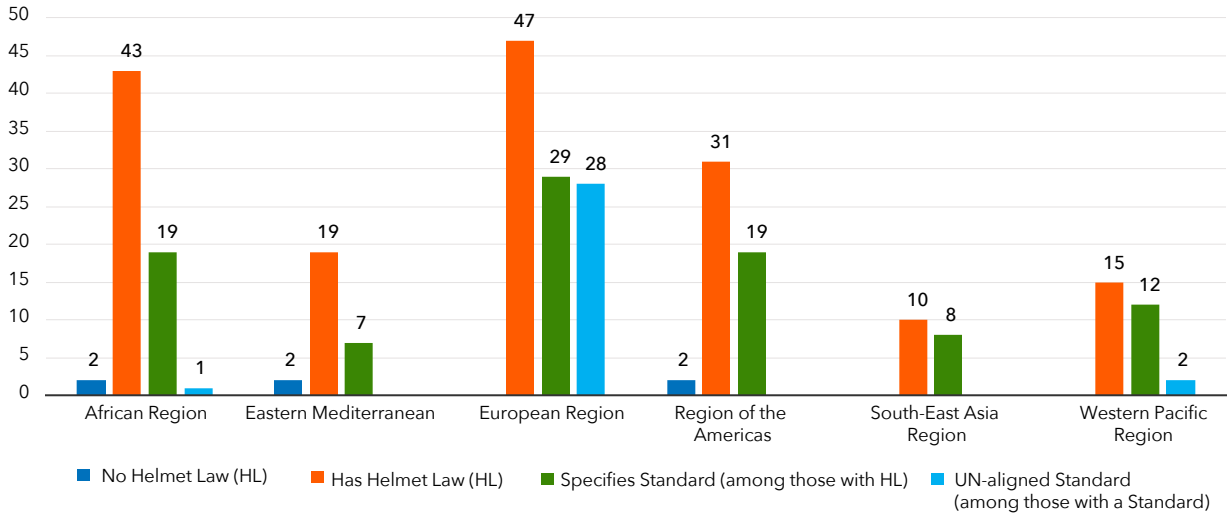
2.8 Analysis of the WHO Global Status Report on motorcycle policy

The WHO Global Status Report (2023) outlines the implementation status of key policy countermeasures for improving motorcycle safety. These include mandatory helmet laws, licensing requirements, and vehicle safety standards.

Helmet legislation and standards

An analysis of the WHO Global Status Report reveals that: 165 countries or 96.5 percent across all WHO regions have enacted a national helmet law, whereas six or 3.5 percent have not (Figure 2.3). Of those with a helmet law, 94 countries or 57 percent specify a helmet standard, and among those, 31 countries or 33 percent align with UN regulations. Regionally, the European region shows the highest uptake, with all 47 or 100 percent countries having a helmet law, 29 countries or 62 percent specifying standards, and 28 or 97 percent adhering to UN regulations. In contrast, while 43 countries or 96 percent African countries have a helmet law, only 19 or 44 percent specify a standard, of which only one country or 5 percent aligns with UN regulations. These findings underscore considerable variation in policy adoption and alignment, highlighting areas where targeted interventions could strengthen compliance with international safety standards.

Figure 2.3. Progression of national helmet laws, standards and UN alignment across WHO regions



Source: Author derived from 2023 WHO data. 2025.

Overall, 157 countries of 162 or 97 percent apply helmet laws to both drivers and passengers, whereas five or three percent focus solely on drivers. Meanwhile, 158 countries of 165 or 96 percent require helmets on all road types, leaving seven countries or four percent that exclude certain roads, and 147 countries or 89 percent apply the law to all engine capacities, with 18 countries or 11 percent exempting specific engine sizes (Table 2.1). Regionally, the western Pacific and European regions demonstrate near-universal application across all categories, whereas other regions show varying degrees of coverage. These patterns suggest that most jurisdictions have broad helmet requirements but still face policy gaps—particularly around engine-type exclusions and passenger coverage—that could be addressed through more comprehensive legislation.

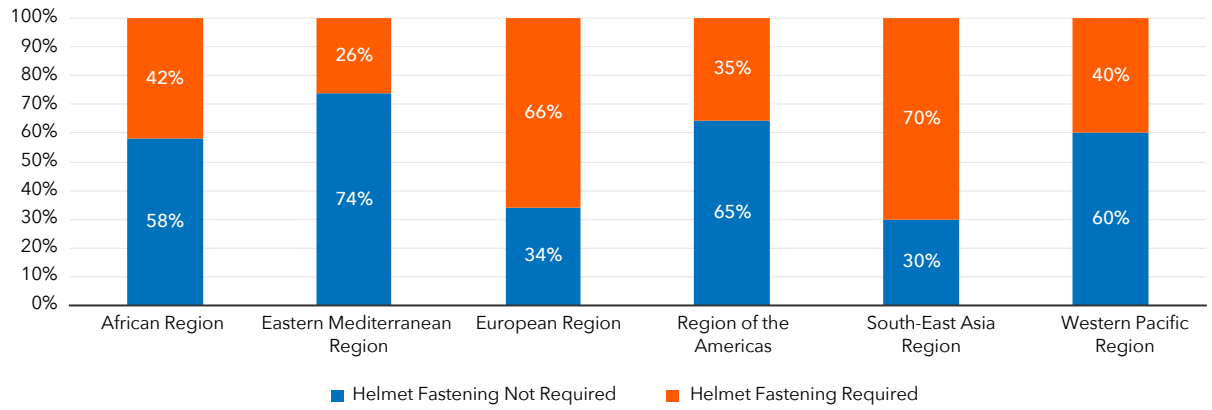
Table 2.1. Helmet law coverage for driver and passenger, road and engine types.

WHO Region	Applies to drivers and passengers		Applies to all road types		Applies to all engine types	
	Drivers	Drivers and passengers	No	Yes	No	Yes
African Region	1	41	no data	43	9	34
Eastern Mediterranean	3	15	3	16	2	17
European Region	no data	47	no data	47	3	44
Region of the Americas	1	29	3	28	3	28
South-East Asia Region	no data	10	1	9	1	9
Western Pacific Region	no data	15	no data	15	no data	15
Total	**5**	**157**	**7**	**158**	**18**	**147**

Source: Author derived from 2023 WHO data. 2025.

Among 165 countries across the six WHO regions, 78 or 47 percent require helmet fastening, while 87 or 53 percent do not (Figure 2.4). Regionally, the South-East Asia region has the highest proportion of countries mandating fastening at 70 percent, followed by the European region at 66 percent. The Americas stand at 35 percent, and the western Pacific region at 40 percent, whereas the eastern Mediterranean region has the lowest share at 26 percent. Overall, these figures indicate that while nearly half of the countries mandate proper helmet fastening, significant gaps remain—especially in regions where legislative coverage is weakest—suggesting an opportunity to strengthen policies and enforcement.

Figure 2.4. Helmet fastening requirements across WHO regions.



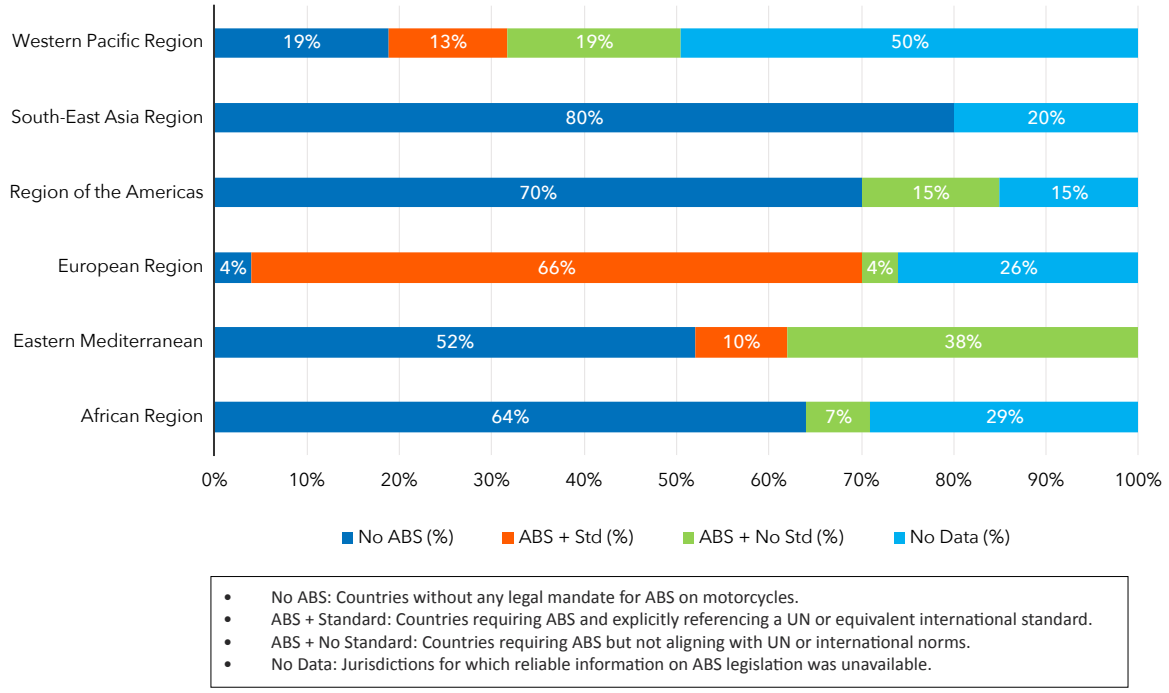
Source: Author derived from 2023 WHO data. 2025.

Despite the availability of comprehensive policies, implementation remains a challenge in many regions. Factors such as limited resources, lack of political will, and cultural resistance hinder effective policy enforcement. Expanded policy frameworks that include stakeholder engagement, data-driven decision making, and cross-sector collaboration are crucial for meeting motorcycle safety objectives.

Anti-lock braking systems

Beyond helmet laws, the adoption of anti-lock braking systems (ABS) is another essential factor in reducing motorcycle crash risk. ABS has been associated with significant reductions in serious and fatal crashes by preventing wheel lock-up and helping drivers retain steering control under hard braking. Figure 2.5 illustrates the status of ABS legislation across WHO regions, including whether ABS requirements meet UN or equivalent international standards.

Figure 2.5. Combined status of ABS requirements and un/international standard alignment.



- No ABS: Countries without any legal mandate for ABS on motorcycles.
- ABS + Standard: Countries requiring ABS and explicitly referencing a UN or equivalent international standard.
- ABS + No Standard: Countries requiring ABS but not aligning with UN or international norms.
- No Data: Jurisdictions for which reliable information on ABS legislation was unavailable.

Source: Author derived from 2023 WHO data. 2025.

From these data, the European region stands out, with nearly two-thirds of its countries or 66 percent requiring both ABS and adhering to recognized standards. By contrast, only seven percent of African countries, or three countries of 45, mandate ABS at all, and none align it with international standards. The Eastern Mediterranean region has a relatively high share of ABS mandates with 10 of 21 countries complying, but eight lack alignment with UN standards.

Overall, pairing mandatory ABS with standardized requirements such as UN Regulation No. 78 and robust helmet legislation provide a comprehensive approach to reducing motorcycle crashes and their severity. These data emphasize that both legislative coverage and technical specifications are integral to maximizing the protective benefits of ABS.

2.9 Critical policy challenges

Commercial motorcyclists are more exposed to risks compared to private drivers due to their frequent travel times and the nature of their work. In addition to infrastructural challenges, critical issues such as helmet usage, compulsory motor vehicle insurance, driving permits and safety training, and the use of information systems—including telematics to track driver behavior and conduct impact evaluations—contribute significantly to the high crash occurrence among commercial motorcyclists.

Standard helmet usage

The proper use of certified quality safety helmets could save millions of lives. However, in many low-income countries, helmets are not readily available and are often considered luxury goods due to high import taxes, tariffs, and associated fees that significantly drive-up costs. These factors contribute to making helmets less accessible and affordable for the average user. Consequently, strict enforcement of legislation and market incentives are needed to improve helmet accessibility and affordability. Additionally, varying levels of stringency in helmet standards and regulations pose a significant challenge in ensuring helmet compliance and quality. In some regions, even when helmet-wearing rates appear high, helmets often fail to meet recognized safety benchmarks or undergo adequate quality control checks, providing insufficient protection against head injuries.

Compulsory motor vehicle insurance

Compulsory motor vehicle insurance plays a pivotal role in enhancing road safety and post-crash care, especially for commercial motorcyclists who are not covered by employment insurance. However, compliance with the requirement of compulsory motor insurance remains weak. For example, in Latin America and the Caribbean, an estimated 38 percent avoid compulsory insurance, with countries like Peru and Colombia exhibiting particularly high rates. In Colombia, a staggering 78 percent of motorcycles do not comply with mandatory insurance acquisition, yet more than two-thirds of paid claims respond to motorcyclists. This highlights the need for innovative solutions, regulations, protocols, and products to expand coverage among motorcycle users.

Driving permits, licensing, and safety training

Driving permits and safety training are crucial for improving commercial motorcyclists' safety. Commercial motorcycle licensing in LMICs faces several distinct challenges related to regulatory frameworks, enforcement, and systemic issues. Most countries require commercial motorcycle operators to obtain commercial driver's license specific to motorcycles, vehicle registration, commercial operation permit of endorsement, insurance coverage, safety inspection certification and tax registration, in some jurisdictions. Some key challenges are: (i) rent-seeking for licenses that may allow unqualified drivers to operate; (ii) minimal online application options requiring in-person visits to multiple offices that may discourage potential applicants; (iii) lack of centralized databases to track licenses and violations; (iv) the informal nature of the sector; (v) high illiteracy rates making written tests inaccessible, (vi) high licensing fees that may be prohibitively expensive for low income operators, and (vii) inconsistent enforcement that creates disincentives for compliance. Some promising solutions are: (i) Rwanda's digitalized motorcycle taxi registration system; (ii) Kenya's integration of mobile systems for license fees; (iii) Tanzania's use of driver associations to improve compliance; (iv) Viet Nam's decentralized testing centers to improve access, and (v) Philippines simplified licensing pathways. Also, despite many available programs, formal training uptake remains limited, particularly in low- and middle-income regions. Multiple studies point to economic pressures, perceived irrelevance of training content, and lack of awareness as key factors (Palacios, 2015; Bartolozzi et al., 2023).

Barriers to formal training

- Economic pressures and time constraints: Commercial drivers often earn incomes directly tied to the volume or speed of their deliveries (Palacios, 2015). Taking time off for classes can mean lost wages, making training a perceived luxury.
- Perceived irrelevance of training content: Many existing courses primarily cover basic vehicle handling and general road rules, which may not address the unique, high stress environments of commercial riding, such as navigating congested urban roads or meeting tight delivery deadlines (Bartolozzi et al., 2023; Elliott and Sexton, 2009).
- Lack of awareness: Some drivers remain unaware that proper training can reduce crash risk and even enhance job performance, especially if messaging on training outcomes does not reach them effectively (Ghayeninezhad et al., 2024; Billheimer, 1998).

Addressing low formal training uptake among commercial motorcyclists demands incentives—subsidies, insurance discounts, or recognition—and regulatory mandates like compulsory courses and graduated licensing. Policy makers and industry stakeholders can significantly boost driver participation by tailoring course content to commercial realities and communicating training benefits more effectively. Ultimately, higher enrolment in structured training translates to fewer crashes, enhanced professional standards, and a safer road environment for everyone.

Use of information systems

The use of information systems, such as telematics, to track driver behavior and vehicle usage is essential for improving the safety of commercial motorcyclists. For instance, Uber Moto uses in-app safety tools, GPS tracking, and distraction–prevention efforts to monitor, evaluate, and respond proactively to on-road behavior. Such systems can help monitor and enforce safety standards, refine government and corporate polices, and enable targeted training programs ensuring that commercial motorcyclists adhere to regulations and protocols designed to reduce crash occurrences. Drivers may also benefit from performance feedback that refines their skills, boosts accountability and yields better insurance rates. However, this is not yet mandatory in several LMICs, due to the informal nature of the commercial motorcycle operations.

2.10 Success stories

Comprehensive interventions are essential to address the alarming rise in motorcycle-related fatalities, especially among commercial motorcyclists. These should include stringent enforcement of helmet laws, improved road infrastructure, and targeted public awareness campaigns. Additionally, enhancing driver training, ensuring access to quality protective gear, and promoting safe riding practices are crucial. Collaboration between governments, private sectors, industry, and international organizations can drive policy reforms and resource allocation. Countries can significantly reduce the risks faced by commercial motorcyclists and improve overall road safety in LMICs by adopting a holistic approach that integrates data-driven decision making and cross-sector collaboration.

Rwanda demonstrated good practice by adopting best practices and creating a model for other LMICs (Box 2.2).

Box 2.2. Rwanda's Story in Improving Motorcycle Safety

Rwanda's WHO-estimated road crash fatalities dropped from 15 to 12 per 100,000 between 2016 and 2021—a notable achievement attributed in part to strong helmet enforcement and broader road safety measures.[a,b,c] Rwanda National Police's Gerayo Amahoro ("Arrive Safely") campaign exemplifies the holistic approach, pairing enforcement with public education.

Key elements

Gerayo Amahoro campaign

- Community outreach: Street quizzes, outreach programs in schools, markets, churches promoted responsible road use.
- Targeted enforcement: Regular checkpoints deter speeding, drunk driving, and distraction.
- Infrastructure collaboration: Speed humps, pedestrian walkways, and improved signage to safeguard high risk areas.

Introducing helmet standards

- RS 576:*2024 Standard:* First national law requiring certified helmets that meet specific safety criteria.
- Helmet Testing Lab: Africa's first such lab at the Rwanda Standards Board ensures imported and local helmets meet required impact-absorption levels.

Public–private partnerships

- Support and funding: Organizations like FIA Foundation, UN Road Safety Fund, and local NGOs provided technical aid and equipment.
- Taxi-moto compliance: Motorcyclist associations promote adoption of certified helmets and demonstrate proper use, reducing fake or substandard helmets.

Impact

- Reduced fatalities: Head injuries for motorcyclists have declined, contributing to the overall drop in road deaths.
- Greater awareness: Roadside checks and community events reinforce why proper helmets save lives.
- Replication potential: Rwanda's focus on standardization, testing labs, and educational outreach offers a model for other nations grappling with rising motorcycle fleets.

Notes:

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b. FIA Foundation, "First African Motorcycle Helmet Testing Facility launched in Rwanda, supported by the FIA Foundation," 12 December 2024. Accessed at: https://www.fiafoundation.org/news/first-african-motorcycle-helmet-testing-facility-launched-in-rwanda supported-by-the-fia-foundation

c. UN Road Safety Fund, "Tuwurinde—Let's Protect the Head," Project Overview. Accessed at: https://roadsafetyfund.un.org/projects/tuwurinde-lets-protect-head

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PART 2.
Addressing Safety and Operational Challenges

Chapter 3: Safety of Motorcycle Drivers and Passengers

Chapter summary

Ensuring driver and passenger safety is essential as commercial motorcycles become increasingly vital for delivery and passenger transport services. The rapid growth of this sector has amplified crash risks, largely owing to fatigue from long working hours, rushed driving behaviors, and inadequate access to affordable, certified safety equipment. The sector's expansion also brings significant socioeconomic benefits, including increased efficiency, lower costs, and improved urban accessibility. Notably, targeted initiatives such as Uber Moto Women in India and BRAC's Four Wheels to Freedom in Bangladesh highlight growing female participation, addressing gender-specific safety and empowerment issues. Industry, companies, governments, cooperatives, and drivers must collaboratively adopt comprehensive safety protocols, leverage technology, and strengthen regulatory frameworks to enhance road safety and sector sustainability.

Key challenges identified

Significant challenges include limited availability of affordable certified helmets, proliferation of counterfeit safety gear, driver fatigue due to balancing multiple platform jobs, and economic pressures causing compromised safety adherence, thus elevating crash risks.

Practical recommendations

- Helmet subsidies: Governments can introduce subsidy programs for certified helmets, and employers can subsidize safety gear for drivers.
- Stronger regulations: Enhanced enforcement against counterfeit safety gear coupled with public educational campaigns to promote awareness.
- Bulk purchasing programs: Ride-hailing companies can coordinate bulk purchases of safety equipment to reduce costs for individual drivers.

- Safety training: Regular training sessions, workshops, seminars, and peer support networks should be implemented to foster a culture of safety.
- App integration: Ride-hailing platforms can integrate safety reminders, fatigue alerts, and feedback systems to encourage and monitor safe practices actively.

Benefits to stakeholders

- Government's policy makers are guided to strengthen legislation, provide affordable access to certified safety equipment, and enhance enforcement of safety regulations and standards.
- Private sector can equip businesses and platforms with practical measures to implement comprehensive safety management protocols, advanced training programs, and technology-driven monitoring systems.
- Drivers and passengers gain a clear understanding of safety responsibilities, practical strategies, and the importance of adhering to safety standards to minimize risks and protect lives.

3.1 Introduction

Ensuring motorcyclist safety is essential for the protection of both drivers and other road users. The surge in motorcycles for commercial purposes, such as taxis and delivery services, has led to increased exposure and a notable increase in crash risks and injuries. Drivers often encounter unique challenges, including time constraints and long hours, which contribute to fatigue and hasty driving behavior, thereby increasing the likelihood of crashes. The availability and affordability of certified safety equipment are also problematic, as drivers may opt for cheaper, non-certified helmets to save costs, prioritizing profit over safety.

It is crucial to embrace the best practices to promote safety within the sector including adherence to traffic regulations, participation in training programs, regular motorcycle maintenance, and the consistent use of safety gear. These proactive measures can help mitigate risks associated with high workloads and time pressures. Encouraging the use of safety equipment—including helmets and protective clothing—alongside advocating for manageable work schedules and proper rest breaks can further reduce crash rates.

3.2 Benefits of using commercial motorcyclists for businesses

Commercial motorcyclists have become indispensable with the explosive growth of online food delivery, quick commerce, and e-commerce for short-distance logistics, ensuring timely deliveries and reliable on-demand passenger services. Motorcycles provide significant operational advantages over larger vehicles, including increased efficiency, as their maneuverability enables easier navigation through congested urban traffic, resulting in faster deliveries and shorter passenger travel times. Additionally, motorcycles generally incur lower operating costs due to reduced fuel consumption and lower maintenance requirements, significantly decreasing overall business expenses. Their compact size also allows for greater accessibility, enabling deliveries and passenger pickups in narrower streets and tighter spaces often inaccessible to larger vehicles. Parking convenience is another key advantage, as motorcycles require smaller, more affordable spaces, thus minimizing turnaround times and reducing operational expenses. Moreover, the lower initial investment compared to cars makes motorcycles a more accessible option for entrepreneurs, facilitating entry into the transport and delivery market and promoting entrepreneurship, especially in emerging economies.

Increased participation of women in the sector

In recent years, women's participation in the commercial motorcyclist sector has steadily increased, reflecting broader global shifts in economic necessity, social norms, and opportunities for flexible work. Despite these gains, female drivers often encounter challenges such as persistent stereotypes, safety concerns, and limited access to resources. Nevertheless, organizations, government policies, and community initiatives are increasingly stepping in to address these barriers, offering targeted support and training to empower women (Busari, 2024; Agustina and Putri, 2023; Muayyad and Wiyono, 2023; Isaroh and Pujianto, 2023). Two notable examples illustrate these efforts: (i) Uber Moto Women in India, an on-demand, female-only bike service that addresses women's safety concerns and expands their earning opportunities (Box 3.1) and (ii) BRAC's Four Wheels to Freedom initiative in Bangladesh, which has successfully equipped women professional drivers with the skills and confidence needed to excel in a traditionally male-dominated industry (Box 3.2).

Box 3.1. Uber Moto Women in India

Uber Moto Women is a first-of-its-kind service introduced in Bengaluru, India, offering on-demand, female-only bike rides that address women's safety and mobility needs[a]. The initiative helps foster trust and comfort among its users by pairing female passengers exclusively with female drivers.

Key features include:

- Dedicated safety measures: Real-time trip sharing, anonymized contact details, proactive ride check monitoring, and a 24/7 safety helpline ensure a safer riding environment for women.
- Flexible earning opportunities: Women drivers benefit from self-determined working hours, manageable trip distances, and simplified navigation, collectively reducing entry barriers.
- Potential for larger economic impact: According to a KPMG report[b], the bike taxi market in India has the potential to generate millions of livelihood opportunities, and women-focused services like Uber Moto Women can encourage more female participation. Studies by Oxford Economics[c] suggest that expanding such ride-hailing options could boost women's workforce participation by over 6% by 2028.

Uber Moto women pose in front of the Karnataka state legislature in Bengaluru (left); It's just another workday for Uber Moto women drivers and the riders (right)[a].

Uber's data also indicates that over 50% of its Uber Moto passengers globally are women, many citing enhanced personal safety and greater control over their commute as primary factors driving their preference for bike taxi services.

Notes:

a. Introducing Uber Moto Women: Women-only bike rides in Bengaluru, Uber Newsroom, 12 December 2024, https://www.uber.com/en-IN/newsroom/uber-moto-women-women-only-bike-rides-in-bengaluru/.

b. Unlocking the potential of bike taxis in India. https://assets.kpmg.com/content/dam/kpmgsites/in/pdf/2024/03/unlocking-the-potential-of-bike-taxis-in-india.pdf.coredownload.inline.pdf

c. Ride-hailing: A platform for women's economic opportunity in India. https://www.oxfordeconomics.com/wp-content/uploads/2023/12/OE_Uber_India_Final-Report.pdf

Box 3.2. BRAC's Four Wheels to Freedom Initiative in Bangladesh

Shahnaaz, a single mother from Bangladesh chose to be a professional motorcyclist to support her family.

Shahnaaz's story highlights how access to proper training and resources can transform lives, inspiring more women to break barriers in the transport sector. Shahnaaz determinedly chose this career, knowing that her options for work were limited with only an eighth-grade education. She saw an opportunity in learning to ride motorcycle—a skill that could offer her independence and a steady income, without relying on low paying, unstable jobs that are all too common in Bangladesh.

BRAC's Road Safety Programme offered sponsored driving training for her at BRAC Driving School. Through the Four Wheels to Freedom project—a driving training initiative to integrate women in professional driving—BRAC continues to empower women in transport by providing them with driving skills and creating pathways for employment in a male-dominated industry. Through BRAC, she received structured training on defensive driving, road safety laws, vehicle maintenance and how to handle challenges on the road confidently, equipping her with skills that extended beyond two-wheelers.

While talking about major challenges in this profession she shared that the biggest challenge for her was not the traffic or the long hours, it was the way people look at her. She constantly faces people's doubt about her motorcycle riding capabilities, being a woman in a male-dominated profession. "In developed countries, no one cares whether the driver is a man or a woman," she reflected with frustration in her voice. She shared that the nervous glances and lack of trust from passengers remain her biggest hurdles. And while she handles these situations with quiet confidence, she avoids working late due to personal safety concerns.

Shahnaaz firmly believes that meaningful change can begin with a shift in mindset. She feels that by improving public perception and enabling women-friendly infrastructure, more women will be encouraged to enter this profession—making the sector safer, more inclusive, and better balanced in terms of gender representation. In her testimonial, she mentioned "I have always been determined to earn my living with dignity. After my scooter was stolen, I felt like I had lost everything. But BRAC's support has given me a new direction—I now dream bigger. With proper training, I can build a more secure future for myself and my children."

Source: Story shared by BRAC Bangladesh, on their motorcycle training initiative.

3.3 Ensuring driver and passenger safety in commercial operations

Shared responsibility in commercial motorcycle operations outlines the roles of motorcyclists, their hiring companies or platforms, and the government in ensuring the safety of these services (Table 3.1).

Table 3.1. Shared responsibilities for safety and compliance in commercial motorcycle operations.

RESPONSIBILITY	DRIVER	PASSENGER	COMPANY	GOVERNMENT
Driver competency				
Licensing and certification	Hold valid motorcycle license; complete initial and refresher training; maintain required certifications.	Not Applicable	Verify driver qualifications through assessments; provide mandatory initial training and refreshers.	Enforce robust licensing standards and mandatory training certification; audit and regulate training programs.
Skill development	Regularly refresh riding skills; stay informed on updated traffic laws and safety practices.	Not Applicable	Provide ongoing safety training, onboarding, and refresher sessions (e.g., defensive riding training).	Set clear driver training standards; mandate regular refresher training for commercial licenses.
Driver fitness and preventing fatigue				
Fatigue management	Ride only when fully rested; take regular breaks; report fatigue immediately.	Alert driver if visibly fatigued; avoid pressuring driver to speed or skip breaks.	Implement fatigue management protocols (e.g., fatigue nudges after extended hours); track hours through app-based monitoring.	Regulate working hours (ILO guidelines: maximum 48 hours per week); conduct public awareness campaigns on fatigue dangers.
Medical fitness and wellness	Maintain good physical/ mental health; report any health conditions or medication impairing riding.	Not Applicable	Require periodic health checks for drivers; remove medically unfit drivers from service; promote wellness support.	Institute medical standards for commercial drivers; require regular medical checks; provide public health initiatives targeting driver health.
Helmet wearing and use				
Helmet compliance	Always wear a certified helmet correctly; ensure passenger also wears helmet properly.	Always wear a correctly fitted helmet; decline rides if helmet is unavailable or substandard.	Enforce strict helmet-use policy; provide/ subsidize certified helmets; use app-based verification (helmet selfie).	Mandate helmet use by law; regulate helmet standards and sales; perform regular compliance checks and public education campaigns.
Helmet availability and quality assurance	Regularly check and replace helmets after damage or significant impacts.	Report substandard helmets provided by drivers; request proper helmet fit assistance.	Ensure supply and distribution of quality helmets; conduct regular helmet condition checks and replace as needed.	Facilitate affordable, certified helmet availability through incentives or subsidies.
Speed				
Speed compliance	Strictly adhere to speed limits; adjust speed according to road, traffic, and weather conditions.	Politely intervene if driver is speeding; report unsafe speeding via app.	Monitor driver speeds via telematics (real-time alerts, weekly safety scores); educate drivers about speeding risks.	Set clear speed regulations; conduct enforcement operations (e.g., speed cameras, patrols); invest in speed management infrastructure.

RESPONSIBILITY	DRIVER	PASSENGER	COMPANY	GOVERNMENT
Speed awareness	Prioritize safety over speed in service delivery; avoid aggressive riding or rushing.	Avoid urging drivers to hurry or speed; promote safe riding culture.	Provide realistic delivery timelines to discourage speeding; reward safe riding behavior; take disciplinary actions for repeated violations.	Promote public awareness campaigns on speeding risks; engage communities in road safety advocacy.
Prevent riding under the influence of alcohol or drugs				
Zero-tolerance compliance	Never ride under alcohol or drug influence; report medication impairments immediately.	Refuse rides from impaired drivers; report immediately via app platform.	Enforce strict anti substance use policies; conduct random sobriety checks; provide substance-awareness training/support.	Enact and strictly enforce zero-tolerance laws for substance impairment; perform regular roadside sobriety checkpoints.
Substance use awareness	Plan responsibly around social drinking to ensure sobriety for riding shifts.	Avoid offering substances to drivers; avoid travel if passenger is heavily impaired.	Educate drivers on substance impairment dangers; provide counselling/support programs for drivers needing assistance.	Conduct public education on dangers of substance-impaired riding; encourage rehabilitation programs for offenders.
Use of mobile phones and distractions (ITF, 2021; ITF, 2023)[a]				
Mobile phone use	Do not use handheld devices while riding; use secure mounts or voice-guided navigation; stop safely for complex phone tasks.	Avoid distracting driver; assist with safe interaction tasks if needed/requested.	Enforce strict policies against handheld phone use; encourage hands-free navigation and app use; educate drivers regularly on distraction risks.	Legislate and enforce prohibitions on handheld phone use while riding; promote public awareness campaigns about distracted riding dangers.
Distraction management	Avoid distractions such as earbuds; remain mentally attentive and focused.	Politely intervene if driver appears distracted by phone or other factors.	Monitor driver behaviors via app/ telematics for distraction signs; integrate distraction detection technology; provide feedback to drivers.	Encourage platforms to adopt app-based distraction detection systems; incentivize hands-free technology adoption through policy and advocacy.

Notes:

a. International Transport Forum. 2021. App-based ride and taxi services: Principles for regulation. OECD Publishing. Retrieved from https://www.itf-oecd.org

b. International Transport Forum. 2023. Regulating app-based mobility services in ASEAN: Case-specific policy analysis (ITF Policy Papers No. 112). OECD Publishing. Retrieved from https://www.itf-oecd.org;

** Passengers are crucial in enhancing motorcycle safety by consistently wearing helmets to minimize head injury risks and reporting unsafe driving behaviors to improve service quality. Their adherence to safety guidelines, including avoiding distractions and substance impairment, significantly contributes to a safer ride-hailing experience.

3.4 Critical role of companies and platforms

The role of companies and application (app) platforms in ensuring the safety of commercial motorcyclists is critical. By implementing comprehensive health, safety, and operational standards, these entities can significantly reduce risks and enhance the well-being of drivers (Examples from service providers shown in Box 3.3 and Box 3.4).

Drivers' well-being

Companies and platforms should ensure that motorcycle drivers undergo initial and regular medical examinations, including vision, hearing, physical, and cognitive assessments. Ongoing health checks, self-reporting of health changes, and support programs are essential to maintain safety standards. Drivers should ride only when rested and mentally fit. According to the International Labour Organization (ILO) workers should not work more than 48 hours per week, have at least one day off per week, and receive compensation for overtime. Companies must ensure compliance with local labor laws regarding riding hours and breaks. Dos and Don'ts for driver and passenger safety can be found in Appendix C.

Companies and application platforms should establish the following life-saving rules for drivers:

- Always wear a helmet and appropriate protective gear.
- Be mindful of the speed limit and adjust speed according to road and weather conditions.
- Do not use a phone or operate devices while riding.
- Do not consume alcohol or drugs—including medications that can affect perception—before or while riding.
- Ensure that the driver is fit, rested, and fully alert before riding.
- Adhere to planned routes and follow journey management.

Recommendations for companies

- Safety education and training: Implement continuous education and training programs, including regular workshops, seminars, daily safety briefings, and toolbox talks.
- Health and wellness programs: Conduct regular medical examinations and encourage self-reporting of health changes. Provide prompt support for health-related concerns.
- Safety equipment: Ensure all safety gear meets high safety standards and regularly upgrade equipment. Establish strict policies against the use of alcohol, drugs, and impairing medications.
- Journey management: Develop plans to limit riding hours, facilitate regular rest breaks, and provide safe resting areas. Utilize monitoring systems to track driver performance and adherence to safety protocols.

Recommendations for application platforms

- Technology integration: Use in-app push notifications for safety tips, online training modules, and automated fatigue detection systems. Implement features that deactivate the app after set driving hours.
- Ongoing learning: Introduce periodic digital quizzes, short checklists, and video training modules accessible within the app.
- Public–private partnerships: Collaborate with government health agencies and local NGOs to provide free or low-cost health checkups, mental health support, and wellness programs.
- User feedback systems: Implement systems that recognize and reward safe riding practices, encouraging responsible behavior among drivers.

Box 3.3. GRAB – Managing safety using technologies

Grab's a delivery service that operates primarily through three business verticals: Mobility (transportation and ride-hailing), deliveries (food, groceries, and parcels), and digital financial services (insurance and lending products). Founded in 2012 to meet a demand for safer taxi rides in Malaysia, Grab expanded to eight countries and more than 800 cities throughout Southeast Asia. In 2024 alone, Grab facilitated over 4.5 billion transactions through its platform. The business model is based on a marketplace platform, matching supply and demand between users and driver- or delivery-partners, ensuring transactions are safe and reliable.

Overview of safety at Grab

Grab aims for a holistic safety approach[a] constantly introducing innovations that are intended to enhance the safety of every ride or delivery. Grab continuously gathers insights to develop policies and products by actively engaging drivers and passengers and fostering a safer environment for all users. According to Grab's 2024 data, despite an increase in the total number of transactions enabled by the GRAB platform

- 99.9% of all rides occurred without any safety incidents.
- Grab recorded an 24.5% reduction in reported in-person incidents year on year.

Safety initiatives for 2-wheelers

As a marketplace platform, Grab generally does not own a motorcycle fleet. Instead, Grab applies two-wheeler safety[b] through a rigorous and mandatory onboarding process, robust safety policies tied to codes of conduct, advanced tech-enabled safety features (speeding alerts, telematic data, fatigue prompts), collaborations with communities and government bodies, and comprehensive insurance coverage for two-wheeler drivers.

Community and government partnerships

Grab states actively engaging with local communities, running campaigns that educate both drivers and passengers on safe riding practices. Grab's notable collaborations in 2024 include working with:

- The Philippine National Police (PNP) on enhancing road safety awareness.
- The Cambodian National Road Safety Committee for educational and awareness initiatives targeting drivers.

Insurance coverage

Grab provides complementary work-related crash insurance coverage to all driver- and driver-partners across all markets in the region. This insurance covers death, disability, and medical expenses reimbursement, ensuring that partners are protected against potential crashes and incidents arising from their work.

Notes:

a. Grab's ESG Report, 2024 - https://assets.grab.com/wp-content/uploads/media/si/reports/2024/Grab-ESG-Report-2024.pdf
b. Extracted from https://www.grab.com/sg/sustainability/platform/safety/

Box 3.4. iFood's commitment to driver safety

iFood is a Brazilian technology company operating exclusively in Brazil, present in more than 1,500 cities. With 55 million customers, the company processes over 110 million orders per month through more than 400,000 active establishments and 360,000 active drivers. As a technology company, it mediates relationships between drivers, establishments, and customers through its platform and technology.

Promoting women in delivery work

iFood's Women Lab project conducted 18 workshops over the last three years to promote more women in the delivery profession, engaging over 800 women delivery drivers to address their challenges and demands. The company offers exclusive personal crash insurance coverage for women, including support for cervical and breast cancer, pregnancy assistance, and wellness procedures. Initiatives like the Psychological and Legal Support Center and the Anti-Discrimination and Violence Policy also aim to attract more women and retain them by providing legal and psychological assistance and ensuring zero tolerance for violence.

Safety and prevention measures

iFood's personal crash insurance[a] has been in place since 2019, with several improvements implemented over the years. iFood created the Vision Zero team in 2024 to strengthen initiatives to prevent crashes involving drivers, based on data analysis of incidents. The company engages in feedback on public policies to improve urban road infrastructure. iFood sensitizes its drivers to reduce speed and raises awareness among other vehicle users to promote safer driving practices collectively.

Educational and training initiatives

iFood's educational platform, Decola, offers specific tracks focused on road safety, covering topics such as preventive maintenance, safety equipment, traffic laws, defensive driving, and emergency handling. iFood also organizes in-person training sessions in partnership with other institutions, emphasizing the use of: (i) safety equipment and adherence to traffic regulations, especially speed control; (ii) personal protective equipment, such as helmets and reflective vests required by law, and (iii) best practices in traffic.[b]

Commercial motorcycle drivers for food delivery using iFood equipment and gear in Brazil.

Technology and monitoring

iFood reports calculating delivery times using artificial intelligence (AI) with a margin that allows drivers to complete their routes safely. The platform regularly monitors speeds using Open Street Map and GPS data, sending educational messages to raise awareness about adhering to traffic rules. iFood's robust telematics system collects essential data to monitor road safety and optimize routes, including average speed, route time, travel history, and geolocation, identifying high-risk areas, and monitoring compliance with speed limits.

Reporting, humanized support and social dialogue

iFood states that it offers reporting channels for issues during and outside of routes, including a floating button in the app to access the safety center, where incidents are analyzed by a specialized team. The company provides social and psychological support to drivers and their families in the event of severe incidents. iFood also invests in social dialogue for engaging with riders and collaborates with local authorities by sharing anonymized data to support public safety policies.

Future initiatives

iFood is piloting initiatives to monitor sudden maneuvers, abrupt braking, and accelerations. The company also has a score system,[c] a rating framework ranging from 1 to 3, to highlight driver performance. It plans to incorporate safety aspects such as adherence to speed limits. and develop advanced telematics to detect complex maneuvers, wrong-way driving, falls, and collisions, as well as predictive interventions on dangerous routes. iFood plans to expand partnerships with public and academic authorities through technical cooperation agreements and research projects to build data-driven solutions, increase traffic safety training, and integrate preventive technologies into the app, reinforcing the commitment to riders' safety.

Notes:

a. Available at: https://entregador.ifood.com.br/vantagens/seguro-pessoal/

b. A good example is our Guide to Rights and Access to Justice. It contains relevant content for customers, stores, and drivers about good rules of coexistence on the platform, as well as about their rights. For drivers, there is a section dedicated to road safety topics. Available at: https://institucional.ifood.com.br/cartilha-de-direitos-e-acesso-a-justica/

c. Available at: https://entregador.ifood.com.br/tudo-sobre-o-score-ifood/

3.5 Good practices

Protective gear

Helmets

Motorcycle drivers have minimal or no protection during a crash. Helmets are the most effective measure for reducing the severity of injuries. Chapter 7 provides an in-depth discussion on this critical issue.

Motorcyclist gear

Motorcyclist gear requirements aim to provide drivers with a comprehensive level of safety and protection. These items can vary by region and regulation but generally include a protective jacket, reinforced pants, gloves, proper footwear, and additional armor elements (Table 3.2). Drivers are also encouraged to use high-visibility gear and weather-appropriate clothing to enhance safety and comfort in diverse conditions.

Table 3.2. Essential protective gear for motorcyclists

Gear	Description
Protective jacket	Abrasion-resistant materials, built-in armor for shoulders, elbows, and back, reflective elements, designed for comfort in various weather conditions
Pants	Durable, abrasion-resistant fabric, reinforced areas, built-in armor at knees and hips, some designed to be worn over regular clothing
Gloves	Strong materials, padding or armor around knuckles and palms, protection against abrasions and impacts
Footwear	Sturdy, protective boots that cover the ankles, have good grip, support and reinforced areas for protection from impacts and abrasions,
Body armor	Additional armor such as back protectors, chest guards, and knee guards, extra protection for off-road or racing drivers
Visibility gear	Reflective vests or apparel that enhance visibility in low light conditions, brightly colored gear to stand out to other road users
Weather gear	Moisture-wicking or waterproof layers, rain suits, thermal liners for colder weather that keep drivers comfortable and safe from the elements

It is imperative that companies take responsibility to provide protective gear to commercial drivers to minimize the risk of injury and enhance their overall safety while riding. Ensuring that all drivers are equipped with high quality protective gear that complies with established safety standards and regulations is crucial for maximizing their protection on the road.

The company should actively promote the use of personal protective equipment (PPE) among its drivers to create a safer riding environment. Further, it is essential to regularly assess the quality and expiration dates of the PPE provided (see also Appendix C).

First aid preparedness for motorcyclists

The requirement for a first aid kit on motorcycles varies by jurisdiction. In many countries, carrying a first aid kit is not mandatory for motorcycles, but it is often recommended as a safety precaution. When riding for commercial services, it is crucial that the commercial driver takes primary responsibility for the safety of the passenger. A first aid kit and basic first aid training is highly recommended and particularly beneficial to address minor injuries or emergencies

while on the road, even where it is not required by law. The best practice is for motorcyclists in commercial service to be trained and certified in first aid procedures. First-aid kit standards vary worldwide and two of the most referenced come from the United Kingdom[1] and the European Union (EU).[2] First aid kit pouches can differ in size and content but typically include essential supplies—bandages, antiseptics, and gloves—designed to address a broad range of minor medical emergencies.

Drivers' cooperative societies

Drivers' cooperative societies are organizations formed by gig economy workers in transportation and delivery sectors—like ride-hailing drivers, bike couriers, food delivery workers—who come together to create worker-owned alternatives to traditional platform companies. Notable ones in North America are Eva, a ride-sharing cooperative in Montreal and Coop Cycle, a federation of bike delivery cooperatives in the EU.

In Kenya, it is mandatory for commercial motorcycles to be members of cooperative societies. Rwanda's transport regulations favor cooperatives for certain types of services whereas Tanzania has established boda boda cooperatives in various cities. In Asia, cooperatives have emerged like Gojek Drivers Association in Indonesia and Coop of Couriers and Drivers (COCODI) in Manila, Philippines. In some Indonesian cities, local regulations now require ride-hailing drivers to join associations or cooperatives. Most other regions in Africa and Asia have voluntary participation models, with incentives for cooperative formation. The key characteristics of these are:

- Worker ownership: Members collectively own and democratically control the cooperative
- Profit sharing: Earnings are distributed more equitably among worker-members
- Democratic decision making: Workers have voting rights on important business decisions
- Better working conditions: Often prioritize fair pay, reasonable hours, and worker protections

Driver cooperative societies empower workers by offering greater control over their working conditions and a larger share of profits. They frequently encounter hurdles such as limited access to capital and difficulty scaling their technology platforms—challenges compounded when competing against well-funded corporate services (Table 3.3 and Box 3.5).

Table 3.3. Pros and cons of driver cooperative societies.

Pros of driver cooperative societies	Cons of driver cooperative societies
• Higher earnings: Workers typically keep a larger percentage of fares-70-85% vs. 50-60% with corporate platforms • Democratic control: Members vote on key decisions affecting working conditions • Local economic benefits: Profits remain in local communities rather than flowing to international shareholders • Better working conditions: Often include crash insurance, healthcare access, and reasonable working hours • Collective bargaining power: Stronger negotiating position with governments and other stakeholders	• Limited capital: Difficulty raising funds for technology development and expansion • Technology gap: Often struggle to match the user experience of corporate apps • Scale challenges: Smaller user base makes it harder to ensure consistent demand for workers • Management complexity: Democratic decision making can slow operational responses • Regulatory hurdles: Many face challenges navigating transport regulations designed for traditional companies • Marketing limitations: Limited resources for customer acquisition compared to venture-backed competitors

Box 3.5. Cooperative societies in Kenya's commercial motorcycle sector

Kenya's Public Transport (Motorcycle Regulation) Bill 2023, tackles rising safety and regulatory gaps in the boda boda (motorcycle taxi) sector by requiring drivers and owners to register with a cooperative society under the Cooperative Societies Act[a,b]. The goal is to formalize operations, reduce crashes and crime, and improve overall road safety.

In Nairobi, most drivers are now registered with a Savings and Credit Cooperative Organization (SACCO), though challenges remain in other parts of the country. SACCO operations are not standardized, but a SACCO must have a minimum of 100 drivers to register. Some SACCOs require drivers to have licenses and proof of insurance, whereas others do not. Additionally, some SACCOs offer flexible ways for drivers to purchase helmets, with seven SACCOs participating in the Helmet Coalition led by Transaid and supported by the FIA Foundation. A national manual of motorcycle associations would be helpful to streamline the procedure.

Key strategies

- Compulsory cooperative membership: Drivers must belong to a recognized SACCO to obtain licenses.
- Formal contracts and safety gear: Mandatory written agreements outline payment terms, work hours, and responsibilities and operators must provide drivers with helmets and reflective jackets and avoid unauthorized motorcycle modifications.
- Tracking and enforcement: Real-time GPS trackers enable more efficient law enforcement and fines address misconduct and unsafe practices.
- Incentives for SACCO membership: SACCOs secure preferential deals for their drivers with insurance companies to promote membership, including deals for repairs and maintenance.

Results and challenges

- Stricter regulation: Unregistered operators face license revocations, incentivizing compliance.
- Improved accountability: Cooperative oversight encourages consistent safety protocols and financial benefits (e.g., insurance deals).
- Hurdles: Administrative demands on county governments and drivers' concerns about fees require ongoing outreach and capacity building.

Notes:

a. Bill Seeks to Regulate Boda Bodas With Formal Contracts, Security Trackers," by Brian Nzomo, Kenyan Wall Street (February 19, 2025). Available at: https://kenyanwallstreet.com/bill-seeks-to-regulate-boda-bodas-with-formal-contracts-security-trackers/

b. Case Study: "Elly Kegode, Founder and Chairman, Kenya Drivers and Owners (KRO) Boda Boda SACCO," Transaid (November 15, 2022). Available at: https://www.transaid.org/wp-content/uploads/2022/11/Elly-KegodeKRO-case-study.pdf

Equitable access to safety

Drivers' cooperative societies can serve as a valuable framework that integrate financial solutions within the motorcycle gig sector. These cooperatives negotiate better insurance rates, facilitate microloans, and organize savings plans to shield members from financial shocks by pooling resources. This collective approach empowers drivers to invest in reliable safety gear and vehicle maintenance, ultimately reducing crash risks. Cooperative oversight also helps moderate work hours, cutting down on fatigue-related hazards. Members can collectively address compliance issues and enhance overall road safety through these mechanisms. The case study (Box 3.6) demonstrates how such strategies bolster both economic resilience and crash prevention in motorcycle transport.

Box 3.6. Financial inclusion as a road safety strategy for commercial motorcyclists

Commercial motorcycles play a vital role in urban and rural transport, especially in emerging markets. However, financial instability among drivers contributes to poor safety practices, such as excessive working hours, lack of insurance, and inability to afford quality safety gear. This case study explores how financial inclusion can improve road safety for gig motorcyclists.

Challenges

- Unstable income and high operational costs: Commercial motorcyclists often operate under unpredictable earnings, leading to overworking and fatigue-related crashes
- Limited access to financial services: Many drivers lack savings, insurance, and credit options, leaving them vulnerable to financial shocks after crashes.
- Poor compliance with safety standards: Drivers struggle to invest in quality helmets, protective gear, or vehicle maintenance without financial security.
- Regulatory challenges in gig work: The rise of ride-hailing platforms has created an informal workforce with no employer-provided benefits

Financial interventions for road safety[a,b,c,d]

- Embedded savings and loan schemes: In Pakistan, Careem partnered with a bank to offer microloans and savings tools for its drivers, reducing financial distress and encouraging responsible working hours
- Earnings-based credit Access: Indian fintech firms like KarmaLife leverage ride platform data to assess income stability and offer flexible credit to drivers
- Insurance products: Motorcycle associations in Kenya facilitate affordable insurance plans, covering medical expenses in case of crashes

Regulatory measures supporting financial inclusion

- Mandatory insurance enforcement: Rwanda has successfully mandated insurance coverage for all commercial motorcyclists, reducing out-of-pocket crash costs
- Helmet subsidies and financing: Countries like Uganda and Tanzania have explored microfinance programs allowing drivers to pay for certified helmets in installments
- Platform-based health and income protection: SafeBoda and UberMoto have introduced earnings-based health insurance, ensuring financial security after injuries

Impact and outcomes

- 30% lower fatality rates among insured drivers compared to uninsured counterparts
- 40% increase in compliance with helmet regulations where microfinancing options are available
- Reduction in excessive working hours, leading to fewer fatigue-related crashes

Road safety policies integrated with financial services can reduce crash risks, improve compliance with safety regulations, and enhance drivers' economic resilience. Governments and private sector stakeholders should scale financial inclusion programs, enforce mandatory insurance, and leverage digital payment platforms to promote safer, more sustainable motorcycle transport.

Notes:

a. Malika Anand and Gayatri Murthy 2022. The Setup: Partnerships and Conditions for Offering Financial Services to Gig Workers. CGAP.
b. International Labour Organization 2020. Guidelines on the Promotion of Decent Work and Road Safety in the Transport Sector.
c. African Development Bank & World Bank Global Road Safety Facility 2022. Motorcycle Safety in Africa.
d. OECD–ITF 2016. Principles for Regulation of App-Based Ride Services.

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Chapter 4. Safety of the Motorcycle

Chapter summary

Ensuring motorcycle safety is crucial for reliable commercial transport and passenger services, especially in dense urban environments and emerging markets. Motorcycles offer affordability, agility, and efficiency, making them indispensable for last mile logistics and passenger transport. The growing adoption of electric motorcycles, driven by technological advancements, supportive policies, and environmental benefits, introduces additional safety considerations, including limited battery range and charging infrastructure challenges. Selecting motorcycles equipped with essential safety features—such as anti-lock braking systems (ABS), higher load capacities, and technological enhancements—is vital to mitigating risks. Regular maintenance, adherence to inspection standards, and fleet renewal initiatives further enhance operational safety and reliability. Partnerships and collaborations across stakeholders, as exemplified by Honda and Green Wheels Africa, illustrate successful integrated safety strategies.

Key challenges

Critical challenges include inconsistent motorcycle maintenance, limited standardized vehicle safety features, inadequate infrastructure for electric motorcycles, insufficient safety compliance, and reliance on aging motorcycle fleets, particularly in low-income regions.

Practical recommendations

- Vehicle safety standards: Mandate minimum safety standards (e.g., ABS for motorcycles 125 cubic capacity and above) supported by incentives.
- Enhanced maintenance protocols: Implement systematic, technology-driven maintenance tracking and regular inspections.

- Electric motorcycle infrastructure: Expand robust charging and battery swapping infrastructure through public–private partnerships.
- Fleet renewal initiatives: Provide subsidies, tax relief, and favorable financing for fleet modernization.
- Technology integration: Utilize advanced driver-assistance technologies and telematics for real-time monitoring and safety feedback.

Benefits to stakeholders

- Government can guide implementation of safety standards, regulations, and supportive infrastructure.
- Private sector gets practical insights on fleet management, maintenance strategies, and safety-enhancing technologies.
- Drivers and passengers get clear understanding of motorcycle safety features, maintenance best practices, and certified motorcycle usage to ensure personal safety.

4.1 Introduction

Motorcycles play an essential role in daily commute, particularly in urban mobility and commercial logistics, especially within congested cities and emerging markets. Their popularity stems from their affordability, maneuverability in dense traffic, and operational efficiency, making them particularly suitable for last mile delivery services and passenger transport (Chandra et al., 2023; Díez, 2023; Kinyua et al., 2023). Additionally, motorcycles facilitate employment opportunities and significantly contribute to local economies, especially within informal sectors and regions with limited public transportation options (Oliveira et al., 2024).

Electric motorcycles have experienced a significant global shift, driven by advancements in battery technology, enhanced charging infrastructure, government incentives, and rising environmental awareness (Kulkarni et al., 2024; Toolib et al., 2023). Electric motorcycles offer substantial benefits, including reduced emissions, lower operating and maintenance costs, and improved urban air quality, making them a sustainable alternative to conventional motorcycles (Hanafillah et al., 2024). However, their adoption also brings technological and regulatory challenges, including battery lifespan concerns, insufficient charging networks, and inconsistent safety standards. Coordinated international strategies can help address these crucial issues for the continued sustainable growth of electric motorcycles (Kumar and Mikkili, 2024; Pranevičienė et al., 2024).

Motorcycle safety in commercial operations

Motorcycle safety is a shared responsibility involving drivers, companies, industry, and government authorities. Drivers must regularly inspect and maintain their motorcycles, companies should implement robust reporting mechanisms and ensure regular servicing, and government agencies must enforce inspection regulations while promoting widespread safety awareness (Table 4.1).

Table 4.1. Shared responsibilities for motorcycle safety in commercial motorcycle operations

Driver responsibilities			
Motorcycle maintenance	Reporting issues	Following guidelines	Keeping the motorcycle clean
Regularly inspect and maintain the motorcycle before each ride, focusing on brakes, tires, lights, and fluid levels.	Promptly report any mechanical issues or irregularities to the appropriate authority or company supervisor.	Adhere to manufacturer guidelines for maintenance schedules and repairs, utilizing qualified mechanics for service.	Maintain a clean motorcycle to enhance visibility and operational efficiency.
Company responsibilities			
Reporting mechanisms	Regular servicing	Maintenance tracking	Access to maintenance resources
Provide channels for drivers to report safety concerns regarding motorcycle conditions and ensure timely inspections.	Ensure all company-owned motorcycles are regularly serviced in accordance with maintenance schedules.	Implement a system for tracking maintenance records and performance logs to identify safety risks.	Offer resources and tools for basic maintenance and repair, such as workshops or educational materials.
Government responsibilities			
Inspection regulations	Periodic audits	Educational resources	Community awareness
Establish and enforce regulations requiring regular motorcycle inspections for safety compliance.	Conduct audits and inspections of commercial motorcycle fleets to verify adherence to safety regulations.	Provide resources to inform motorcyclists about safe maintenance practices and the significance of upkeep.	Support initiatives promoting motorcycle safety and maintenance awareness through workshops and public campaigns.

4.3 Vehicle safety features

It is essential to consider several key specifications and features when selecting a motorcycle for commercial purposes to ensure they meet the demands of frequent use and operational efficiency, as well as maximize cost effectiveness and enhance overall service delivery.

Anti-lock braking system

ABS prevents wheel lock-up during braking, reduces skidding risk and improves control in emergencies, which is crucial for commercial drivers on varying road conditions. As the most common motorcycle safety upgrade, ABS allows drivers to steer and avoid obstacles during sudden braking. The debate between ABS and non-ABS motorcycles involves safety, cost, maintenance, and driver skill. ABS motorcycles enhance safety by preventing wheel lock-up, improving control in adverse conditions, and potentially reducing braking distance. Non-ABS motorcycles are cheaper, simpler to maintain, and offer direct braking control, preferred by experienced drivers, but they pose a higher wheel lock-up risk and require more skill. Studies show ABS-equipped motorcycles have fewer crashes, indicating a safer experience, especially for less experienced drivers or those in bad weather (World Bank, 2022). Non-ABS motorcycles are cheaper, simpler to maintain, and offer direct braking control, preferred by experienced drivers, but they pose a higher wheel lock-up risk and require more skill. Studies show ABS-equipped motorcycles have fewer crashes, indicating a safer experience, especially for less experienced drivers or those in bad weather (World Bank, 2022).

Higher load capacity

Motorcycles for commercial operations should have a higher load capacity to safely transport cargo or passengers. Such motorcycles must be equipped to handle the weight of deliveries or passengers, crucial for efficiency and safety.

Technological integration

Motorcycles equipped with incorporated technology, such as phone mounts and sensors, can enhance the drivers' ability to navigate and communicate effectively while on the road. These tech features contribute to improved operational efficiency and driver and passenger safety.

Passenger handles or footpads

Safety and comfort for passengers can be enhanced by motorcycles equipped with passenger handles and footpads. These features provide stability and comfort for individuals being transported, contributing to a more pleasant riding experience (see case study in Box 4.1).

Box 4.1. The motorcycle industry in Europe (ACEM)

Blindspot detection technology in motorcycles

Source: Continental

The Motorcycle Industry in Europe[a] (ACEM) developed a wide range of technologies that can operate individually or in combination with others, such as cornering ABS, rear wheel lift-off protection, automatic brake force distribution, amplified braking systems and brake by wire. Daytime running lights (DRL) and amber position lights (APL) are also used by the industry to make motorcycles more detectable for other road users, applying the safety principle of seeing and being seen.

Suspension and stability systems

High-performing suspension systems allow vehicles to adapt to different road surface conditions. They include electronic suspension systems, speed sensitive electronic steering stabilizers, semi-active suspension systems—which adapt the response of the suspension to road conditions, vehicle speed and driving style—and self-regulating suspensions.

Driver assistance systems for motorcycles

These systems help prevent crashes and contribute to collision reduction by supporting the drivers in critical situations. They also enhance enjoyment and convenience by making life easier for drivers. Relevant examples include traction control systems (TCS), tire pressure monitoring systems (TPMS), electronic adjustable suspension, electronic cruise control, gear shift assistant, fuel economy assistant, proximity activation systems like keyless riding systems, built-in vehicle navigation systems, adjustable vehicle riding modes, side view assist, and automatic stability control.

Advanced systems, i.e., adaptive cruise control, forward collision warnings and even blind spot detection will contribute to increase the level of safety for motorcyclists. The technology underpinning these systems is a combination of radar sensor, brake system, engine management and human machine interface.

Note:

a. Extracted from https://roadsafetystrategy.acem.eu/home/a-long-standing-commitment-to-vehicle-technology/

4.4 Motorcycle specifications

Commercial safety and comfort elements to be considered

A basic consideration would be to balance commercial viability with driver and passenger safety and overall comfort when selecting motorcycles for delivery or passenger transport. Factors such as fuel efficiency, payload capacity, storage solutions, and reliable safety features can significantly influence operational costs and user satisfaction (Table 4.2). Regular maintenance and driver training further ensure that the chosen vehicle remains fit for purpose and compliant with local regulations.

Table 4.2. Key commercial, safety, and comfort considerations for motorcycles

Criteria	Details
Fuel efficiency	High fuel efficiency keeps running costs low, and important for frequent delivery tasks
Payload capacity	Ensure it can handle the weight of packages, reinforced suspension, sturdy frames
Storage solutions	Equipped with or compatible with delivery boxes, panniers, or top cases
Durability and reliability	Known for reliability and low maintenance requirements
Maneuverability	Lightweight and agile for navigating congested urban areas
Comfort	Comfortable seating position and easy-to-use controls
Safety features	Disc brakes, ABS for 125 cc and above, good visibility lighting
Maintenance	Regular maintenance is crucial for roadworthiness and safety
Driver and passenger Training	Invest in driver training and ensure adherence to local safety regulations

Selection of motorcycles for hire–passenger service

Ease of use, comfort, and maneuverability are critical components in ride-hailing or motorcycle taxi services, especially in urban settings. Suitable models range from lightweight scooters to robust commuter motorcycles and newer electric options. Operators must provide appropriate safety gear, ensure comfortable pillion seating, and follow local passenger transport regulations. Drivers should have proper licensing and experience to maintain high service and safety standards. At the executive level, selecting motorcycles that align with company objectives and logistical needs is essential. Key considerations include engine size, fuel efficiency, durability, local availability and safety (Box 4.2). Evaluating these factors helps balance initial investment with long-term benefits. Motorcycles with engine capacities between 50 and 250 cubic capacities offer a good balance of fuel efficiency and power, suitable for varying distances and urban traffic in city deliveries (Table 4.3). Motorcycle choices tailored to specific commercial applications enhance service quality and customer satisfaction. Although local vehicle dealerships can often advise on the best motorcycle for delivery services,[1] the optimal choice depends on factors such as service scope, availability of workshops, spare parts, and buyer reviews.

Table 4.3. Motorcycle engine capacity recommendations for taxi and food delivery applications.

Engine capacity	Best for	Usage - taxi service	Usage - food delivery
Up to 50cc	Very short distances (2–5 kilometers)	Suitable for short urban rides, primarily carrying one. Excel in congested areas due to lightweight and easy maneuverability.	Effective for delivering small orders quickly. It can be equipped with delivery bags but has limited storage space.
125cc –150cc	Urban environments, short to medium distances (5–20 kilometers)	Good for one passenger and light luggage, providing agility in heavy traffic.	Ideal for quick deliveries within short distances, combining speed with fuel efficiency.
150cc – 250cc	Intermediate distances (20 kilometers and above), mixed urban and suburban settings	Comfortable for one or two passengers, with adequate power for longer trips and varied terrains.	Handles larger orders effectively while maintaining good speed and comfort over short to medium distances.

Box 4.2. Honda's approach to safer motorcycles

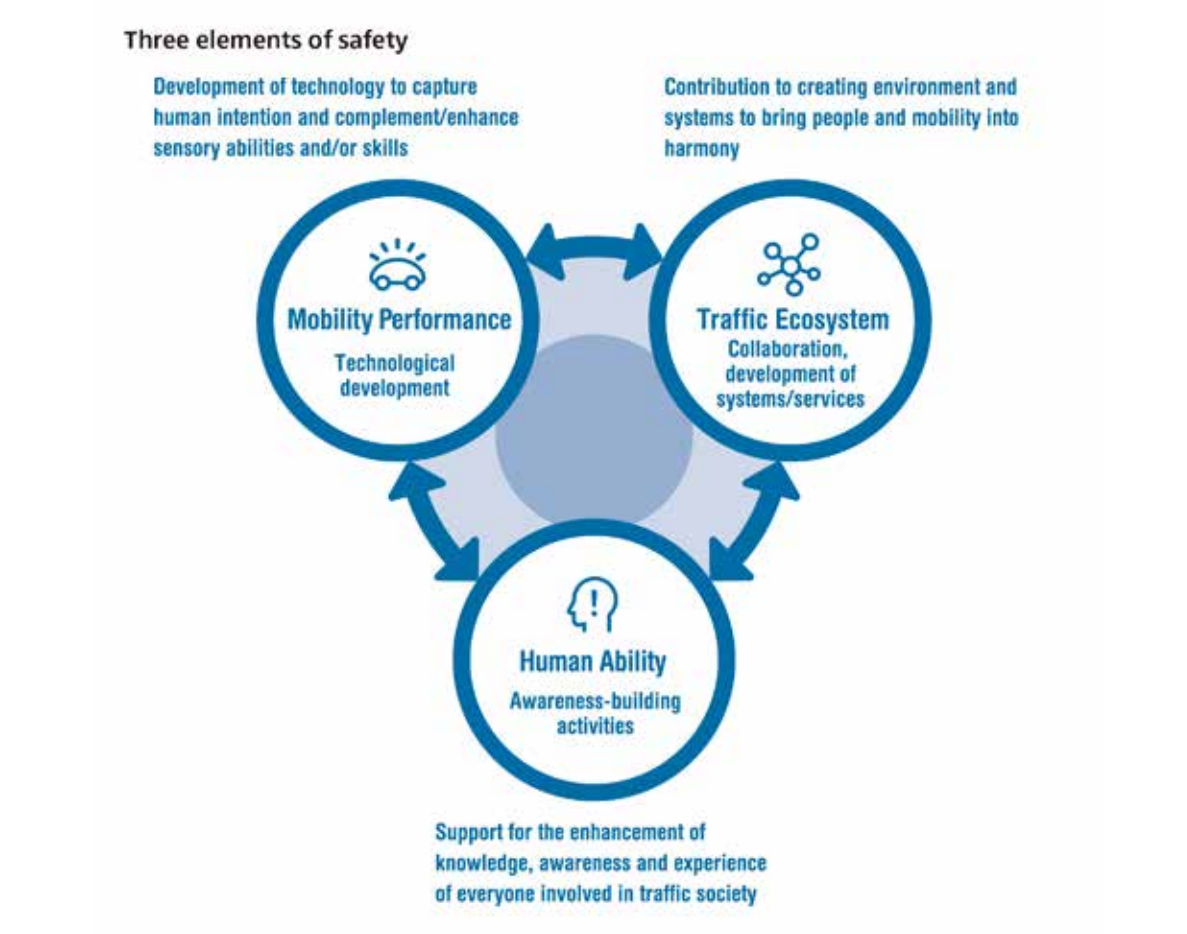
Based on the global concept of "Safety for Everyone," Honda aims to achieve zero traffic collision fatalities involving Honda motorcycles and automobiles- worldwide by 2050. Honda's global safety slogan is "Safety for Everyone: Honda dreams of a collision-free mobile society where our customers, and everyone sharing the road, can safely and confidently enjoy the freedom of mobility." Honda also set a milestone of halving the number of global traffic collision fatalities involving Honda motorcycles and automobiles by 2030. Honda has worked to address traffic crashes caused from various factors by evolving three elements individually and combining each of them: human ability (awareness-building activities), mobility performance (technological development), and traffic ecosystem (collaboration with others and system or service development). Honda is conducting educational activities targeting a wide range of people and equipping motorcycles with advanced braking systems such as anti-lock brake system (ABS) and combined brake system (CBS), as well as lights with high visibility for both drivers and other road users.

Honda's global safety slogan.

Safety for Everyone

Honda dreams of a collision-free mobile society where our customers, and everyone sharing the road, can safely and confidently enjoy the freedom of mobility.

Three elements of safety adopted by Honda



In the financial year 2024, the application rate of advanced brakes in emerging countries reached 85%—Brazil, India, Indonesia, Thailand, and Viet Nam.

Honda established Traffic Safety Promotion Operations in Japan in 1970, and subsequently to promoting activities overseas in 1972. Since then, Honda has been expanding its efforts overseas by establishing traffic education centers[b] and by March 2024, to 43 countries.

Partnerships

Thai Honda Co., Ltd. ("Thai Honda") and the Department of Land Transport (DLT), the Ministry of Transport (MOT) of Thailand signed an MOU in April 2023 to develop a hazard recognition program to prevent traffic crashes. and fatalities by applying the knowledge on traffic crash prevention that the company has accumulated over the past 30 years. Thai Honda is collaborating with these ministries to raise awareness and educate prospective driver's license holders and young people in the country.

Notes:

a. Honda Motor Co., Ltd. (2024). Honda ESG Data Book 2024: Environment, Social, and Governance Report.

b. Honda facilities where internal and external instructors on traffic safety are trained and driving safety education is provided to corporations, schools, and individual customers

4.5 Environmental impact of motorcycles

Modern motorcycles can be a less-polluting alternative to cars and sport utility vehicles (SUVs) in some respects, primarily due to their smaller size, lighter weight, and generally more efficient engines. They typically consume less fuel and produce lower overall emissions per kilometer traveled compared to larger vehicles. However, this can vary significantly based on the type of motorcycle, its engine size, and the emissions standards to which it complies. Motorcycles with two-stroke engines can cause more pollution because they burn an oil–gasoline mixture (Potera, 2024). This results in higher emissions of smoke, carbon monoxide, hydrocarbons, and particulate matter compared to the gasoline only four-stroke engines found in newer models. Additionally, the situation is exacerbated in many Asian countries where two-wheelers are modified into three-wheeled baby taxis by attaching a sidecar. Individual circumstances and local regulations should be considered for a more accurate environmental impact assessment. Although many modern motorcycles are designed to meet stricter emissions regulations, older models or those with higher performance engines may emit higher levels of pollutants. Additionally, factors like riding behavior and maintenance can impact a motorcycle's emissions. Companies should evaluate and choose motorcycle models based on fuel efficiency and emission standards.

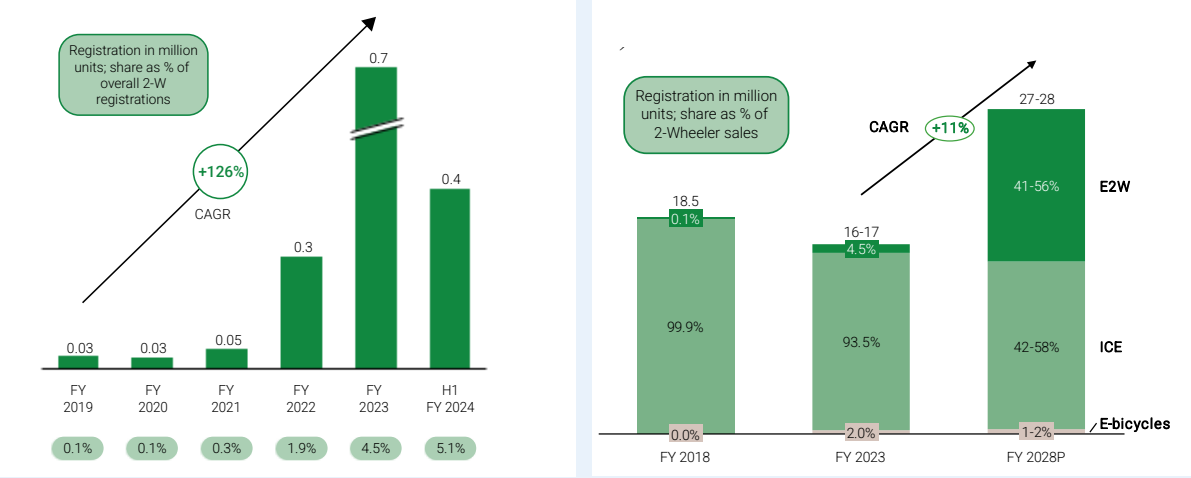
4.6 Electric motorcycles

Electric motorcycles represent a promising avenue for sustainable transportation—offering both financial and environmental advantages. Recent advances in lithium-ion battery technology, coupled with heightened awareness of climate change, have propelled the industry forward. Government incentives, coupled with rising demand for cleaner mobility options, are motivating major brands to expand the electric motorcycle market. For example, electric two-wheelers already constitute approximately one-quarter of all last mile delivery fleets in India—a figure projected to reach 25–30 percent by 2025—as large food delivery and e-commerce or logistics providers[2] pivot to electric (Box 4.3). Government incentives in India and a rapidly expanding last mile delivery sector are driving exponential adoption of electric two wheelers. In another instance, electric vehicle manufacturer Roam has signed a deal to supply 3,000 electric motorcycles to Uber in Kenya. These strategies aim to slash operational costs and emissions, advancing both corporate and national sustainability goals.[3]

Box 4.3. Electric two-wheeler growth in India

India's electric vehicle (EV) sector is experiencing rapid growth, driven by government incentives, rising environmental concerns, and technological advancements. Although the sector is still in its early stages, it is steadily gaining traction. It grew by a compound annual growth rate (CAGR) of 126% between 2019 and 2023 and accounted for more than five percent of all 2-W registrations till September 2024. According to the industry estimates,[a] EVs are likely to account for almost half of the domestic 2-W sales volumes by financial year (FY) 2028 (see figure below).

Electric 2W Share, 2018-2023



Source: Vahan Dashboard, MORTH, GOI.

EVs have piqued the interest of all Indian industries providing last mile and hyperlocal deliveries (e.g., online food and grocery delivery and last mile couriers.) as well as ride-hailing services like motorcycle taxi and are fast becoming the preferred choice of these industries. Electric 2-Ws already constitute about a fourth of all last mile delivery fleets in India. A key reason for this is the recognition of the declining total cost of ownership of EVs against internal combustion engine (ICE) vehicles in delivery fleets, thereby leading to lower operational costs in the long run, and lower carbon footprint. As such, 2-W EV original equipment manufacturers (OEMs) are designing specific products to serve these businesses with features like greater carrying space (in place of the pillion seat) and longer range over a single charge.

Last mile deliveries are expected to grow at a compounded annual growth rate (CAGR) of 15–20% by 2028, with food delivery services alone projected to grow at a CAGR of 30%.[b] This will lead to expanded delivery fleets, which are already causing significant air pollution and carbon emissions. As such, since last mile deliveries account for nearly half of the total delivery emissions, their electrification is critical for India's commitment to reducing transport emissions as well. This may also explain why the Government of India aims to elevate the proportion of EV sales to 80% in two-wheelers and three-wheelers by 2030.

Notes:

a. Draft Red Herring Prospectus, Ola Electric Mobility Limited, December 22, 2023.

b. Extracted from https://cleanmobilityshift.com/market-trends/electrification-of-last-mile-delivery-fleets-will-drive-25-of-ev-sales-in-india-by-2025/

4.7 Electric motorcycle challenges for passenger service

Electric motorcycles offer significant benefits but also face notable challenges, particularly in passenger services. Various case studies, such as those from Indonesia (Suwignjo et al., 2023), highlight both the advantages and obstacles. Suwignjo et al., 2023, highlighted that drivers using electric motorcycles save up to 68% of their income compared to those using internal combustion engine (ICE) vehicles. The lack of charging and swap stations limits the suitability of single battery electric motorcycles for online ridesharing. Future research could focus on designing and optimizing public charging and battery swap stations to boost everyday use. For instance, the Bangkok study (Box 4.4) shows lower operational costs and higher productivity owing to battery-swap stations, though charging infrastructure remains a key obstacle. Comparative analyses further illustrate how electric models compare to ICE counterparts in purchase cost, range, and environmental impact, thereby emphasizing the need for supportive policies and robust charging networks (Table 4.4).

Box 4.4. Implementing battery-swapping electric motorcycle taxis in Thailand

The National Energy Technology Center (ENTEC), NSTDA, and partners launched the "Electric Mobility Two-Wheelers Toward Sustainable Society" project in Samyan District, Bangkok on December 22, 2023. The goal is to transition motorcycle taxis to electric[a] to reduce air pollution and improve urban living standards.

Project goals:

- Promote electric motorcycles to combat air and noise pollution.
- Enhance urban quality of life with sustainable transport.
- Create a replicable model for integrating electric vehicles into public transport.

Strategic Actions:

- Battery-swapping system: Implement swapping stations to reduce downtime and costs.
- Financial support: Explore solutions to make the transition economically viable for drivers.
- Collaborative ecosystem development: Engage sectors to standardize batteries and infrastructure.

Outcomes and expectations:

- Address congestion and pollution with efficient, electric transportation.
- Balance environmental sustainability with economic viability for more than 80,000 motorcycle taxi drivers in Bangkok.
- Develop a replicable model for other urban areas using insights from this project.

This initiative demonstrates how collaborative efforts can transform urban mobility with sustainable and cost-effective transportation solutions.

Note:

a. Extracted from https://www.chula.ac.th/en/news/148482/

As the demand for efficient, low-cost, and environmentally friendly transportation grows, many operators in Indonesia are considering the shift from conventional motorcycles to electric alternatives. Each option offers distinct advantages and drawbacks—ranging from purchase costs and performance to environmental impact and government incentives. Table 4.4 outlines these key factors to help businesses and policy makers make informed decisions.

Table 4.4. Comparative analysis of electric vs. conventional motorcycles in Indonesia.[a]

Electric motorcycles		Conventional with ICE	
Benefits	**Drawbacks**	**Benefits**	**Drawbacks**
Environmentally friendly: Produce significantly less carbon emissions and hydrocarbons than gasoline motorcycles. This aligns with Indonesia's goals to reduce pollution. Lower running costs: The operational cost per kilometer is lower than gasoline motorcycles, due to cheaper electricity compared to gasoline. However, initial purchase cost may be higher. Superior torque: Electric motors offer higher torque, beneficial in stop-and-go city traffic common in Indonesia. Tax advantages: In Indonesia, electric motorcycles receive a 10% tax break, making them more affordable.	Higher initial cost: The initial purchase price is higher than conventional motorcycles. Lower range/speed: Electric motorcycles have lower maximum speed and shorter range per charge compared to gasoline motorcycles. This may vary depending on the battery. Battery charging time: The charging time for the battery is not explicitly mentioned, however, this could be a drawback compared to the speed and ease of refueling a gasoline motorcycle.	Lower initial cost: Less expensive to purchase than electric motorcycles. Longer range: Can travel longer distances on a single tank of fuel. Faster refueling: Refueling is much quicker than charging an electric motorcycle battery.	Higher running costs: More expensive to operate due to higher fuel costs. Higher emissions: Produce significantly more carbon emissions and pollutants than electric motorcycles. Lower torque: Lower torque than electric motorcycles which is less ideal for stop-and-go traffic.

Note:

a. Eileen Onggaria, Fajar Marhaendra, Ilham Nur Pratama, Olivia Elisabeth Manurung, Arief Nurdini and Rahmat Nurcah. Proceedings of the International Conference on Industrial Engineering and Operations Management Manila, Philippines, March 7-9, 2023.

4.8 Safety implications of electric motorcycles

In Nairobi, Green Wheels Africa partnered with Uber to introduce electric two-wheelers for the boda boda market, launching a guaranteed salary program (GSP) and a target-based lease-to-own (LTO) model. Due to financial sustainability issues, Green Wheels phased out the GSP and shifted to the LTO model (Box 4.6). A World Bank study comparing EV drivers to ICE drivers found significant improvements in helmet ownership, passenger helmet usage, average helmet usage, and insurance coverage among EV drivers, highlighting the impact of structured programs on safety and the challenges of EV adoption.

Box 4.5. Kenya study on EV and ICE

In Nairobi (Kenya), a startup called Green Wheels Africa (GW) partnered exclusively with Uber to introduce electric two-wheelers (EVs) for the local boda-boda market. While many existing drivers continue using internal combustion engine (ICE) motorcycles, GW launched two distinct programs for EV adoption:

- Guaranteed salary program (GSP): Drivers receive a fixed wage 6 days/week, twelve hours a day on an EV.
- Target-based lease-to-own (LTO): Drivers lease an EV but must complete weekly trip and hour targets.

Due to financial sustainability challenges, GW phased out the GSP and shifted to the LTO model. World Bank conducted a study comparing EV drivers in GW's program (treatment) to ICE drivers (control) to evaluate road safety outcomes and broader impacts of shifting from ICE to EV motorcycles.

Indicator	EV drivers (Treatment)	ICE drivers (Control)	Change observed
Helmet ownership	Increased from 44% to 80%	Rose from 52% to 72%	Greater jump among EV drivers (possibly due to program rules).
Passenger helmet ownership	28% → 56%	20% → 36%	Both groups improved, but EV drivers gained more.
Average helmet usage	70.55% → 86.36%	85.91% → 7.96%	Significant rise for EV group, drastic drop-in ICE group.
Insurance coverage	56% → 84%	68% → 64%	EV group took advantage of formal coverage; ICE slightly declined.

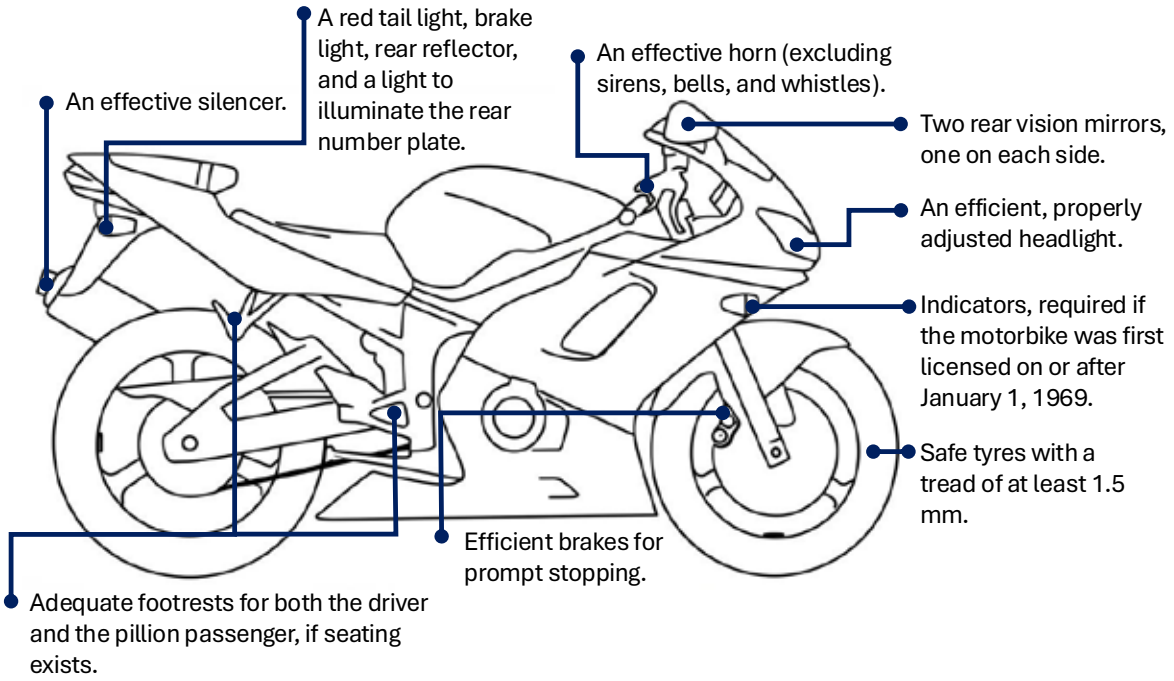
Business model and road safety implications

- Program structure versus driver behavior: Guaranteed salaries or structured lease programs can encourage safer riding habits (e.g., consistent helmet use, insurance uptake). However, increased hours can lead to higher crash risk.
- EV adoption barriers: Although EV usage aligns with reduced fuel costs and environmental benefits, financial sustainability and adequate charging infrastructure remain concerns for large scale adoption.
- Corporate partnerships: GW's exclusive arrangement with Uber facilitated partial success in safety metrics (helmet use, reduced alcohol riding), but dropping the GSP for the LTO model indicates the need for viable revenue strategies to maintain safety gains.

4.9 Maintenance and inspection

A roadworthy motorcycle is one that is safe to operate and complies with the legal standards established for vehicle safety. An illustrative example highlighting the key features of a roadworthy motorcycle showcases a standard from Western Australia Ridesafe Handbook (Figure 4.1).[4]

Figure 4.1. Roadworthy motorcycle example.



Source: Adapted from the Western Australia Ridesafe Handbook. 2025.

Regular maintenance is fundamental for maintaining roadworthiness, minimizing exhaust emissions, and extending the life of the motorcycle. It is important to inspect motorcycles before the start of the working day. This should include checks detailed in the manufacturer's manual. If any concerns arise regarding motorcycle operation or condition, drivers are to consult the owner's manual or seek professional mechanical advice.

Usually inspections are:

- Per manufacturer’s recommendation, usually based on mileage, by an authorized OEM workshop.
- For drivers to conduct a daily check before starting a business day.

It is good practice to establish internal, frequent inspection intervals proactively for safety-critical motorcycle parts to identify potential failures and facilitate replacements before breakdowns occur.

Regular motorcycle inspections are critical for maintaining driver and passenger safety and optimal motorcycle performance. Table 4.5 summarizes essential guidelines for conducting effective inspections.

Table 4.5. Essential dos and don'ts for motorcycle inspections.

Motorcyclists and supervisors respectively	
Dos:	Don'ts:
• Check cables, such as those for the clutch, brakes, and accelerator for signs of fraying or wear. • Lubricate cables with oil or grease as needed to prevent wear and ensure smooth operation. • Inspect your motorcycle regularly to maintain its performance. • Follow recommendations in the motorcycle manual for servicing schedules. • Have services performed by a qualified motorcycle mechanic, as this requires specialized knowledge and tools.	• Don't ignore signs of fraying or wearing cables, as this can lead to malfunction. • Don't neglect lubrication for your cables; this can cause stiffness and premature wear. • Don't skip regular checks and maintenance; it's essential for safety and performance. • Don't attempt to service your motorcycle yourself without the necessary expertise or tools.

4.10 Motorcycle's age

Fleet age is a critical safety factor in motorcycle operations, with older models often suffering from decreased reliability, outdated technology, inconsistent maintenance, and regulatory compliance issues. In poorer countries, these challenges are aggravated by limited funding and the availability of newer motorcycles in the market. Financial constraints often force operators to rely on older, second-hand motorcycles, which significantly increase the risk of crashes.

Guidelines can be established to address these issues, including maximum age limits for commercial motorcycles and financial incentives for fleet modernization, such as tax reductions or insurance discounts. Regular maintenance programs should be mandated, along with stakeholder collaboration to promote fleet renewal initiatives. Additionally, international aid and partnerships could be sought to support the acquisition of new motorcycles and improve overall safety standards.

Notes

1. Extracted from https://www.msi.org.za/honda-ace-125-the-best-food-delivery-bike-for-mzansis-urban-streets/
2. Such as Zomato, Swiggy, Big Basket, Flipkart, Amazon, DHL
3. Extracted from https://cleanmobilityshift.com/market-trends/electrification-of-last-mile-delivery-fleets-will-drive-25-of-ev-sales-in-india-by-2025/
4. Extracted from https://www.transport.wa.gov.au/mediaFiles/licensing/LBU_DL_B_RideSafe_f.pdf

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Chapter 5. Insurance

Chapter summary

Insurance for commercial motorcyclists is essential for enhancing road safety, managing risks, and providing critical post-crash care, especially as these drivers often lack employment-related insurance coverage. Despite compulsory insurance laws, compliance remains weak due to insufficient enforcement, economic barriers, complex claim processes, and limited public awareness. The benefits of robust insurance include financial protection, incentivizing safer riding practices, facilitating recovery after crashes, and promoting vehicle safety improvements. Insurance data collection also informs targeted road safety policies. Diverse insurance types—such as liability, comprehensive coverage, personal injury protection, and passenger insurance—cater to varying commercial needs. Effective enforcement combined with strategic initiatives, such as custom policies, telematics integration, flexible payments, and enhanced claims processes, can significantly improve insurance uptake and compliance.

Key challenges identified

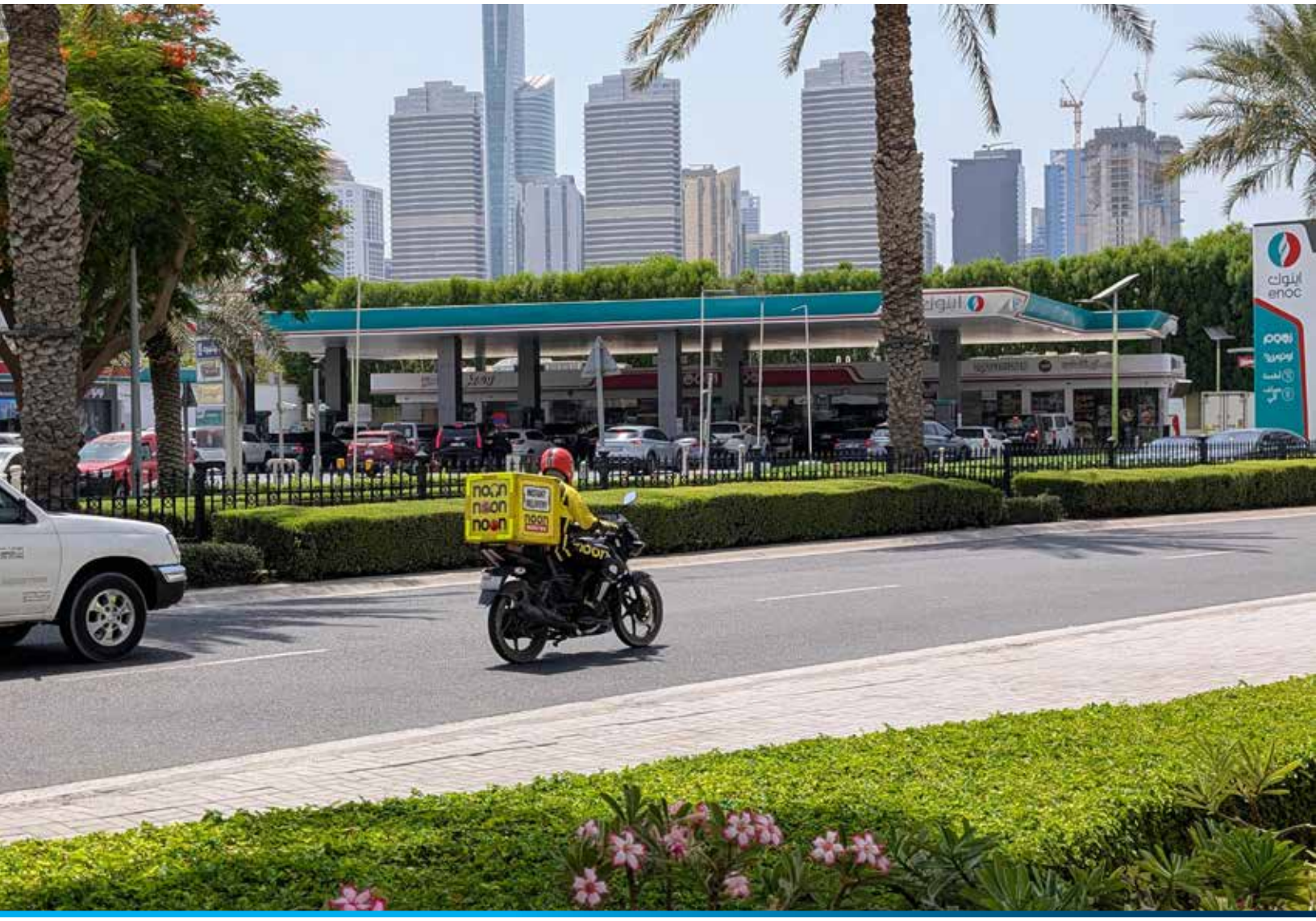
Key challenges include weak enforcement of compulsory insurance, limited public awareness of benefits, socioeconomic barriers, cumbersome claims processes, limited coverage for commercial use, and inadequate institutional coordination hindering effective insurance implementation.

Practical recommendations

- Custom insurance solutions: Tailor policies specifically for commercial motorcycle operators, considering their unique risks.
- Enhanced safety training: Implement mandatory training programs linked to insurance incentives.
- Telematics integration: Utilize monitoring devices to reward safer riding habits through premium discounts.
- Flexible payment options: Offer simplified purchasing processes and subscription-based insurance models.
- Streamlined claims process: Simplify claims procedures to improve trust and encourage policy renewals.

Benefits to stakeholders

- Government finds assistance in strengthening insurance enforcement mechanisms, setting regulations, and developing public awareness campaigns.
- Private sector uses frameworks for developing targeted insurance products, streamlining processes, and leveraging technology to enhance risk management.
- Drivers and passengers gain clarity on insurance benefits, adopt responsible behaviors, and use better financial protection and post-crash care.



5.1 Introduction

Compulsory motor vehicle insurance plays a pivotal role in enhancing road safety and post-crash care, specifically for commercial motorcyclists as they are not covered by employment insurance. Information from Insurance companies confirms motorcycles' high involvement in road crashes; approximately 25 percent of their paid claims involve motorcycles (World Bank, 2021). For instance, in India, about 60 percent of all two-wheelers fail to renew their insurance,[1] and insurance companies do not bother to pursue these as the transaction cost of following up is higher than the insurance premium. Latin America and Caribbean (LAC) region has reported an estimated compulsory insurance avoidance rate of 38 percent, with countries like Peru and Colombia exhibiting particularly high rates, where approximately half of the vehicle fleet fails to adhere to this mandate. Compliance with the requirement of compulsory motor insurance remains weak, especially by motorcycle owners. Some common reasons for this are:

- Weak enforcement: Penalties and monitoring systems are inadequate, making noncompliance a low risk choice.
- Low public awareness: Many motorcycle owners are unaware of the legal requirement or the broader benefits of compulsory insurance.
- Socioeconomic barriers: High upfront premiums and the perception that insurance is a financial burden deter low-income owners.
- Cumbersome claims process: The perception of cumbersome process of getting claims reimbursed is a significant barrier to insurance renewal.
- Limited coverage: Some companies pay for insurance only while delivery agents are on the job.
- Institutional coordination: Limited data sharing and fragmented administrative systems hinder effective policy implementation.

Overall, countries face the challenge of harnessing an insurance market capable of offering effective road safety products. The challenges demand innovative solutions, regulations, protocols, and products aiming to expand uptake and coverage across the population, particularly among motorcycle users. This is because the use of commercial motorcyclists is increasing and that a significant majority of them engage in informal labor activities such as deliveries and passenger transportation.

The role of motor insurance has been highlighted by the WHO in the Global Plan for the Decade of Action for Road Safety 2021–2030. The plan calls for a shared responsibility by strengthening the role of the private sector, while specifically mentioning the insurance sector and mandatory insurance schemes as part of the recommended actions to ensure safe road use, post-crash response and financing. Likewise, motor insurance may contribute to four objectives of the Sustainable Development Goals: (i) reduction of road traffic fatalities by 50 percent; (ii) health system funding; (iii) safer transportation system, and (iv) mobilizations of financial resources.

5.2 Benefits of insurance

Commercially used motorcycles are often subject to time constraints, which can result in hurried driving and speeding, thereby increasing the probability of crashes. Standard motor insurance typically does not cover the specific risks associated with these activities, necessitating specialized policies. Insurance provides financial protection and risk management by covering liabilities for injuries or damages to third parties, ensuring compensation for medical expenses and property damage. The following are the key benefits of insurance:

- Financial protection and risk management: Motor insurance provides financial protection for vehicle owners and drivers, and businesses in the event of a crash. It covers liabilities for injuries or damages incurred by third parties, ensuring that victims receive compensation for medical expenses and property damage.

- Safer riding practices: Insurance policies often include incentives for safer riding, such as reduced premiums, also called bonus-malus, for drivers with clean records or those who complete safety courses. This encourages drivers to adopt safer behaviors.
- Rehabilitation and recovery: Insurance can cover the costs associated with medical treatment, rehabilitation, and therapy for crash victims, aiding in their recovery and reducing the long-term impact of road traffic injuries.
- Vehicle safety improvements: By requiring certain safety features as part of the coverage criteria, insurance companies can indirectly promote the use of safer, well-maintained vehicles, contributing to overall road safety enhancements.
- Data collection and analysis: Insurance companies collect extensive data on road crashes, which can be used to analyze trends and develop more effective safety measures. These data can influence policy decisions and the development of targeted interventions.
- Legal and regulatory compliance: Mandatory motor insurance ensures that vehicle owners comply with legal requirements, and the existence of such frameworks aligns with international road safety standards, national laws, and company policies.

5.3 Types of insurance

Commercial motorcycle insurance typically comes in several types, each serving different needs and situations for companies and users. Its availability can vary by country or region depending on regulatory requirements and local market development. Some common types found globally are:

- Liability insurance: This is the most basic form of coverage and is required by law in many places. It covers damage to other people and their property if the insured is at fault in a crash.
- Comprehensive insurance: This covers collision regardless of who is at fault and non-collision related incidents, such as theft, vandalism, or natural disasters.
- Personal injury protection: This type of insurance covers medical expenses for injuries sustained by the driver and passengers in a crash, regardless of fault.
- Uninsured or underinsured motorist insurance: This offers protection in case the driver of another vehicle is at fault and does not have sufficient insurance to cover damage.
- Additional coverage options: Many insurance providers offer additional coverage for specific risks, such as coverage for riding gear or increased liability limits.

It is important to review the specifics of each type of coverage and choose a plan that best meets the needs for commercial use. Companies or buyers should always check local laws and regulations, as insurance requirements vary by location.

5.4 Enforcement of insurance

The enforcement of commercial motorcycle insurance is typically governed by laws and regulations that vary by country or region. However, many developing countries still do not legally regulate this requirement. Here are some key points to be considered regarding the enforcement of insurance.

- Legal requirements: Most countries require motorcycle drivers to have a minimum level of liability insurance. This is applied by law enforcement agencies, and penalties for riding without insurance can include fines, license suspension, and impoundment of the motorcycle.

- Claims process: In the event of a crash, the enforcement of insurance involves filing a claim with the insurance provider. Both parties involved in the crash may need to provide evidence, such as police reports, witness statements, and photographs.
- Reporting crashes: Drivers are usually required to report crashes to both the company and to insurance providers. Failing to do so may result in invalidation of the insurance coverage or denial of any claims.
- Penalties for fraud: Attempting to manipulate insurance claims, such as providing false information or staging crashes, can lead to severe legal consequences, including criminal charges and denial of claims.
- Regulatory oversight: Insurance companies and businesses are often regulated by government agencies to ensure compliance with insurance laws and to protect consumer rights.

It is important to understand the specific insurance laws and rental agreements of a user's area to ensure compliance and adequate protection while operating business by riding a motorcycle.

5.5 Strategies to improve insurance uptake

Some strategies that would help improve the insurance uptake by commercial motorcycles are:

- Custom insurance solutions: Insurers can create policies for commercial motorcycle operators, including cargo protection, passenger liability, and specialized equipment coverage. This can also include usage-based insurance covers: (i) pay-as-you-ride where premiums are proportional to actual mileage; (ii) pay-as-you-go which is predefined mileage slabs with flexibility to purchase additional mileage coverage as needed during peak times, and holidays; and (iii) pay-how-you-ride, based on usage patterns and riding habits.
- Safety training: Implementing mandatory safety training programs for commercial motorcycle operators has the potential to decrease crash rates, which can result in reduced insurance premiums and improved overall road safety.
- Use of telematics: Installing telematics devices on commercial motorcycles can help monitor riding behavior and provide data to insurance companies. Safe riding habits could lead to discounts on premiums for businesses.
- Flexible payment options: Simplifying insurance purchase processes and offering flexible or affordable payment options or subscription-based insurance models can ease the financial burden on businesses and individuals that rely on commercial motorcycles for their operations.
- Regular risk assessments: Insurers could conduct regular risk assessments for businesses using commercial motorcycles to determine appropriate coverage needs, ensuring that businesses are adequately covered without overpaying.
- Group insurance plans: Encouraging the formation of groups, like delivery driver consortiums, to purchase group insurance plans can lead to cost savings and better coverage for individual operators.
- Streamlining claims processes: Simplifying the claims process for commercial motorcycle operations can help businesses recover quickly after an incident, ensuring minimal disruption to their services and increase insurance uptake.
- Incentives for safety improvements: Offering financial incentives for commercial motorcycle operations without crashes or that invest in safety features, such as protective gear or advanced braking systems, can promote safer business practices.
- Awareness campaigns: Running awareness campaigns focused on the importance/benefits of proper insurance coverage for commercial motorcycle operators can help educate businesses about potential risks and their financial implications.
- Collaboration with local authorities: Partnering with local transport authorities to promote the best practices for commercial motorcycle use and insurance awareness can create a more supportive environment for operators.

- Heavy fines for riding without insurance: Advocating to increase penalty amounts for not carrying mandatory insurance may help. The hypothesis suggests that increases in fines may lead to reduced offenses when enforced by cameras rather than police, as officers may adjust their enforcement approaches in response to stricter penalties. A 2016 meta-analysis[2] revealed varied effects of fine increases on violation rates:(i) a 15-percent decrease with 50–100 percent rise of fine amount; (ii) no effect with up to 50 percent increases, and (iii) a four-percent increase with over 100 percent increases. Recidivism—or a tendency to relapse to a previous mode of behavior—effects differ, particularly for more severe offenders. Additionally, fine increases may lead to a 5–10 percent reduction in all crashes and a one percent to 12 percent reduction in fatal crashes, though these increases were unspecified. The study notes caution regarding causal relationships due to confounding factors and emphasizes the importance of high, sustained enforcement levels and perceived fairness in achieving positive outcomes.
- Mandated multiyear insurance: In some countries such as India, when purchasing a two-wheeler, insurance is bundled into the purchase for the first five years.

By focusing on these areas, the commercial motorcycle sector can improve its insurance situation, leading to better risk management, safety, and overall business performance.

5.6 Driver insurance

Drivers' insurance typically includes comprehensive coverage, liability protection, and crash benefits that help drivers be adequately protected in various situations on the road.

- Comprehensive coverage usually protects against a wide range of risks, including damage to motorcycles from crashes, theft, vandalism, and natural disasters.
- Liability protection usually covers damage or injuries drivers may cause others in a crash, ensuring drivers are financially protected if held responsible.
- Crash benefits usually provide financial assistance for medical expenses, rehabilitation, and lost wages in the event of a crash, regardless of who is at fault.

5.7 Passenger insurance

Motor passenger, or pillion, insurance is essential coverage for drivers who carry passengers on their motorcycles. Pillion insurance protects both the driver and the passenger in the event of a crash. This type of insurance typically includes liability coverage for injuries or damage caused to third parties, as well as medical expenses for passengers. Having pillion insurance ensures that the passenger is covered in case of a crash. In some countries, it may also be a legal requirement to have adequate insurance that covers passengers.

Many motorcycle insurance policies incorporate pillion coverage automatically, and it pays to verify that such coverage is included. Some providers may offer specific policies for drivers who frequently carry passengers. When considering motorcycle insurance, companies or buyers must inquire about pillion coverage to ensure comprehensive protection for both drivers and passengers.

5.8 Cargo or luggage insurance

Countries typically have weight and size restrictions on cargo that can be carried on motorcycles, with regulations varying significantly by jurisdiction to address safety concerns and commercial transport needs. Kenya serves as an example of LMICs' approach to cargo insurance, characterized by the prevalence of boda boda. In contrast, Western Australia and the United Kingdom represent developed economies with established more established insurance frameworks.

Cargo restrictions for motorcycle in Kenya

Kenya's Public Transport (Motorcycle Regulation) Bill, 2023, Article 22, emphasizes the necessity for all motorcycle owners to secure motor commercial public service vehicle insurance. Third Party Only (TPO) insurance is the minimum option, covering third-party bodily injuries and property damage. Third Party Fire and Theft (TPF&T) insurance adds protection against fire and theft. Comprehensive coverage offers the most extensive protection, including accidental damage, theft, fire, and third-party liabilities. While the bill categorizes motorcycles into private, commercial, and PSV (boda boda) types[3], the focus remains on the insurance requirements that apply universally to all motorcycle owners.

In addition to insurance, the bill outlines regulations concerning cargo weight and dimensions. Motorcycles with engines not exceeding 50cc are limited to carrying a maximum of 30 kilograms, with allowances for higher weights for engines up to 400cc. Cargo dimensions are strictly controlled to ensure safety, with specific limits on width, height, and rearward projection, accompanied by mandatory visibility markers. Passenger luggage is restricted to 10 kilograms, provided it is securely positioned between the driver and passenger. The transportation of unauthorized goods, including contraband and items restricted under specific acts, is prohibited. Delivery motorcycles must adhere to separate regulations, requiring suitable storage compartments to prevent damage or loss of goods during transport.

Cargo Insurance schemes in Western Australia and United Kingdom

In both Western Australia and the United Kingdom, motorcycle insurance is a legal requirement, ensuring that drivers are covered for injuries caused to others in the event of a crash. This commonality underscores the importance both regions place on public safety and accountability on the roads. In Western Australia, the Insurance Commission provides coverage that includes care for catastrophic injuries, although it does not extend to vehicle or property damage.[4] This approach emphasizes comprehensive support for severe injuries, reflecting a focus on long-term care and rehabilitation. Operating an unlicensed motorcycle on roads in Western Australia can result in substantial financial penalties for both the driver and the motorcycle's license holder because motor injury insurance does not apply when an unlicensed vehicle is used on public roads.

Conversely, in the United Kingdom, the legal minimum is third-party insurance, which covers damage or injury to others but not the driver's own vehicle.[5] This system highlights a more basic level of protection, with additional coverages for couriers and delivery drivers due to their higher risk profile. Standard motorcycle insurance would not protect such drivers and therefore they require a motorcycle courier policy depending on the purpose use.[6] For business commuting, drivers using motorcycles to travel to multiple work locations must insure for business use, even if their occupation isn't as a driver. This applies to any work-related destination, such as training courses or bank visits. Failing to update the insurance policy for even a one-off journey can invalidate coverage. For courier and delivery services, where driving is professional, "Class 3" business motorcycle insurance is required. This covers

the driver and bike for delivering low-cost goods like food or parcels. Many insurers will include occupations such as door-to-door sales in this category, even if the business is not actually carrying the goods they are selling.

5.9 Procedural challenges

The lack of trust in insurance companies among motorcycle drivers stems from complex claims processes, high premiums, and limited policy variety, especially within high-risk environments. The following steps are recommended to restore confidence and broaden tailored insurance options.

- Transparent claims processes: Insurance providers should simplify and clearly outline claims procedures, setting realistic expectations for drivers.
- Improved communication: Through the government lead agency, (see Chapter 10) establish and maintain open communication channels, providing regular updates on claims and policy adjustments through applications and customer service representatives.
- Customer education: Insurance companies host educational workshops to inform drivers about insurance products and claims procedures, thereby enhancing their understanding.
- Customer feedback mechanisms: Association of Insurance Companies or another authority appointed by government should implement feedback systems for policy holders to share their experiences, demonstrating a commitment to service improvement.

Tailored policies to support industry

Expanding tailored insurance options involves several key strategies. First, insurers should develop customized policies that address specific needs based on usage patterns, such as commuting or delivery services. Implementing usage-based insurance models can adjust premiums according to actual driving habits, incentivizing safe behaviors among drivers. Additionally, collaborating with manufacturers and ride-hailing platforms can create integrated insurance offerings tailored to specific driver demographics such as age and experience, and usage. Furthermore, expanding product offerings to include safety gear for instance, can attract a broader range of drivers, ultimately enhancing the insurance landscape for motorcycle users.

Notes

1. Extracted from https://www.thehindu.com/business/uninsured-two-wheelers-are-a-major-safetyconcern/article69072121.ece
2. Global Road Safety Partnership, A Guide to the Use of Penalties to Improve Road Safety, 2021.
3. Extracted from https://www.pesabazaar.com/insurance/motorcycle-insurance
4. Extracted from Ride Safe Handbook
5. Extracted from https://www.gov.uk/vehicle-insurance
6. Extracted from https://www.gocompare.com/motorbike-insurance/work-use/

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Chapter 6: Licensing, Training and Telematics for Commercial Motorcyclists

Chapter summary

Effective licensing, training, and telematics systems are vital components in ensuring commercial motorcyclists' safety and operational efficiency. Licensing systems typically include motorcycle-specific licenses, commercial endorsements, health evaluations, criminal background, and driving record checks, along with age restrictions and license suspension mechanisms. Evidence-based driver training—including defensive riding techniques, emergency response preparedness, load management, and fatigue management—significantly enhances driver competencies, reducing crash risks and promoting safer road behaviors. Advanced telematics solutions provide real-time data on driver behavior and vehicle conditions, enabling proactive risk management, enhanced security, and efficient operations. Together, comprehensive licensing, targeted training programs, and advanced telematics can substantially reduce crash risks, improve driver and passenger safety, and foster sustainable commercial motorcycle operations.

Key challenges identified

Challenges include inconsistent licensing standards across regions, inadequate driver training programs, limited emergency preparedness among drivers, insufficient adoption of advanced telematics systems, and fragmented regulatory enforcement mechanisms.

Practical recommendations

- Standardized licensing framework: Harmonize licensing requirements including age, health, and background checks to enhance safety and compliance across jurisdictions.
- Comprehensive training programs: Implement ongoing evidence-based training in defensive riding, emergency responses, fatigue management, and customer interactions.
- Telematics integration: Employ advanced telematics systems for real-time driver monitoring, performance analysis, and proactive safety interventions.

- Regular competency assessments: Conduct regular driver evaluations to maintain high safety standards.
- Policy enforcement and incentives: Enforce strict licensing rules with clear penalties for violations and incentivize compliance and safe behaviors.

Benefits to stakeholders

- Government uses data to standardize licensing systems, improve regulatory oversight, and strengthen road safety enforcement strategies.
- Private sector applies guidance to select qualified drivers, implement effective training programs, and adopt telematics to optimize fleet safety and operational efficiency.
- Drivers and passengers can enhance their driver skills and safety awareness, reducing crash risks and ensuring passenger safety through informed, responsible, and technologically supported riding practices.

6.1 Introduction

Licensing for commercial motorcyclists is a fundamental aspect of ensuring safety on the roads while enabling efficient operation within the commercial motorcycle industry. Licensing regulations are complex, typically including motorcycle-specific licenses, commercial endorsements, health requirements, and background checks. Age restrictions further dictate eligibility, emphasizing safety and experience levels. Policy makers and operational managers can better navigate the regulatory landscape by understanding these requirements, introducing evidence-based drivers training and applying telematics, thereby ensuring compliance and promoting safe practices within the sector. This knowledge will also assist companies in selecting qualified drivers, optimizing workforce management, and enhancing overall operational efficiency.

6.2 Licensing requirements

The licensing requirements for motorcyclists operating commercial motorcycles vary significantly across different countries and regions. However, many jurisdictions share common standards, including age restrictions, necessary licenses, health assessments, and background checks. This chapter will outline the key components of motorcycle licensing system for commercial drivers, focusing on eligibility criteria and operational considerations.

Licensing requirements:

- Motorcycle license: a valid motorcycle-specific license is required to legally ride a motorcycle for commercial use. Drivers must pass traffic rules and practical exams to ensure they can safely handle motorcycles and navigate traffic.
- Commercial endorsements: In many regions, commercial motorcyclists must obtain commercial endorsement or certification. This additional credential is particularly crucial for those involved in delivery services, taxi operations, or other commercial activities, ensuring they meet specific operational standards.
- Health requirements*:* Commercial drivers are frequently required to meet health and fitness criteria. This may involve vision tests and general medical evaluations to determine that drivers are physically and mentally capable of operating a motorcycle safely.

Background checks

- Criminal background checks: Regulatory agencies and companies often mandate criminal background checks for individuals seeking to operate commercial motorcycles. This procedure is primarily aimed at ensuring the safety of passengers and cargo, particularly in transportation or delivery scenarios.
- Driving record checks: A clean driving record is usually a prerequisite for obtaining a commercial motorcycle license. Individuals with past traffic violations, driving under the influence (DUI), serious crashes may be disqualified, as these factors can indicate a higher risk of future incidents.

Age restrictions

- Minimum age*:* The minimum age for operating a motorcycle commercially typically starts at 18 years in most jurisdictions. Some regions do allow younger drivers of 16 or 17 years to operate motorcycles under specific conditions or with provisional permits (Box 6.1; Box 6.2).
- Age for specific classes: the minimum age can be higher—usually set at 21 or 25—for motorcycles classified as larger or specific commercial categories. This ensures that operators of more powerful motorcycles have adequate experience and maturity before handling them.

Appendix D contains more in-country cases regarding age restrictions from Asia, Africa, Europe, and South America.

Suspension of license

Demerit points: Several developed and developing countries use demerit points to track and penalize traffic violations for all vehicles, including motorcycles. Such systems typically: (i) assign points for different traffic violations; (ii) set thresholds that trigger penalties like suspensions, fines, or mandatory courses; (iii) have a reset period when points expire; (iv) have higher penalties for motorcycle-specific infractions due to increased risks. These countries have specific provisions for common motorcycle infractions like not wearing helmets, lane-splitting or filtering, exhaust modifications, and number of passengers on the motorcycle.

Box 6.1. Driver license procedure in New South Wales, Australia[a]

The minimum age to apply for a learner's permit is 16 years and 9 months, but a full motorcycle license can be obtained at 20, following a graduated licensing system.

Steps to Getting Your Rider Licence

1. Pre-Learner Course[b]
- Two-wheel motorcycle course
  - 2 sessions of three and a half hours over 2 days
- Three-wheel trike course
  - 1 day over 6 hours
- Valid for 3 months
- Minimum age for this stage is 16 years and 6 months

2. Rider Knowledge Test
- Minimum age for this stage is 16 years and 9 months

3. Learner Rider Licence
- Minimum 3 months
- Valid for 12 months

4. Pre-Provisional Course[b]
- 6-hours over 1 day and includes a Motorcycle Operator Skill Test (MOST)
- Valid for 3 months

5. Provisional P1 Rider Licence
- Minimum 12 months
- Valid for 18 months

6. Provisional P2 Rider Licence Unless Exempt[c]
- Minimum 24 months
- Valid for 30 months

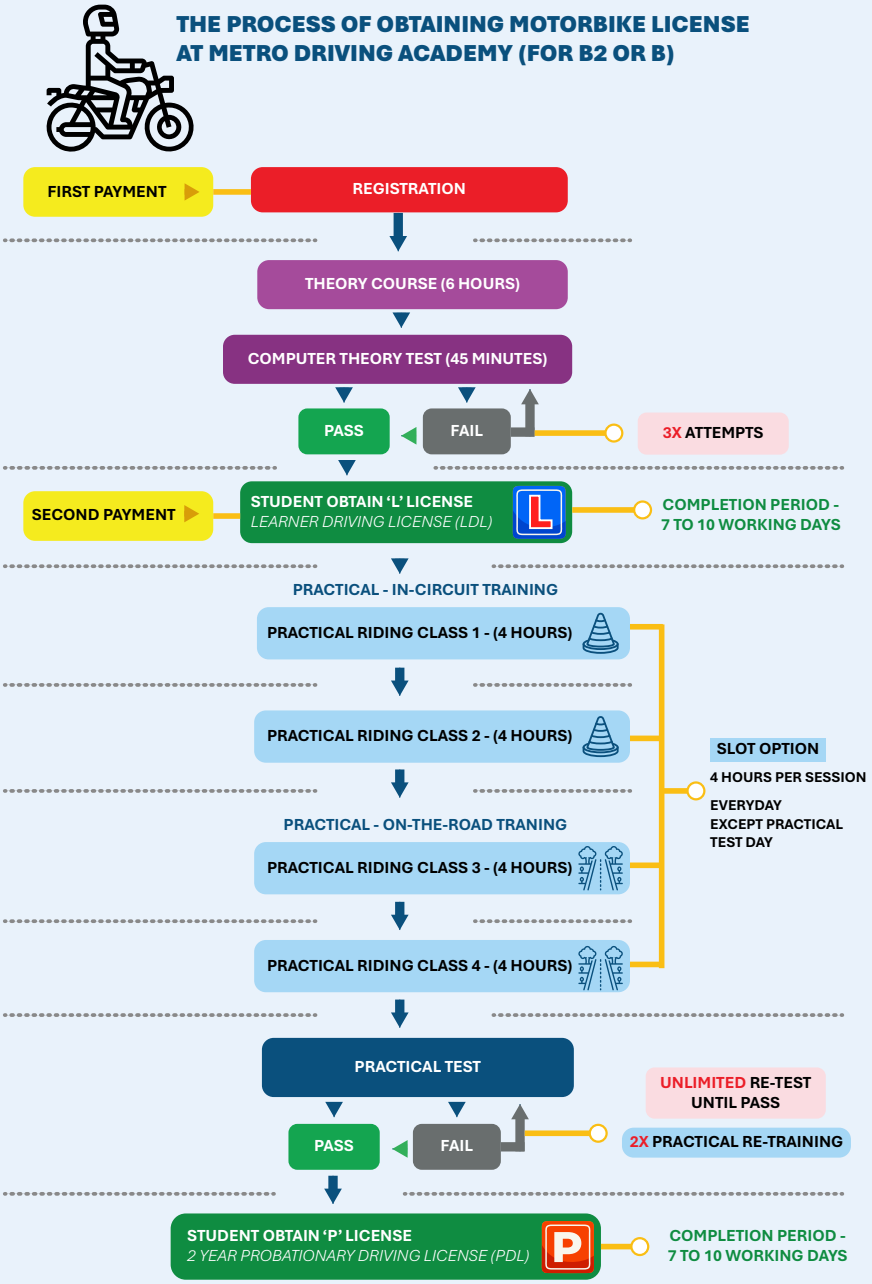
7. Full Licence
- Issued for 12 months, 36 months, 5 or 10 years[d]

Notes:

a. Adapted from New South Wales, Australia Motorcycle Driver's Handbook.
b. Where the pre-learner, pre-provisional and MOST are provided you must pass them.
c. Riders aged 25 and older with a full car licence are exempt from the P2 stage.
d. 10 years applies to full Class C and R licence holders aged 21 to 44 years.

Box 6.2. Licensing procedure in Malaysia

The minimum age to apply for a motorcycle license is 16 with a provisional license (class B) for motorcycles below 250cc. Drivers can obtain a full license at 17 after passing the necessary tests. A sample process for obtaining motorcycle license is shown below.



Source: Adapted from Metro Driving Academy

6.3 Licensing costs and timelines affects compliance rates and road safety

Motorcycle licensing costs and procedural timelines have substantial implications for compliance rates and overall road safety outcomes LMICs. High licensing costs act as significant financial barriers, especially for low income populations that rely heavily on motorcycles as a cost-effective mode of transport and source of livelihood (Miah et al., 2024; Arosanyin and Yakubu, 2014). These economic barriers frequently drive riders into informal practices, increasing the prevalence of unlicensed motorcyclists who typically exhibit riskier behaviors, including speeding and failure to adhere to traffic regulations. Such behaviors contribute to higher rates of crashes, injuries, and fatalities (Champahom et al., 2023; Olasinde et al., 2022).

In addition to cost, lengthy and complicated licensing procedures discourage formal compliance, further exacerbating the issue. Extended waiting periods, complex bureaucratic requirements, and inefficient administrative systems lead riders to bypass formal licensing processes altogether. Consequently, the effectiveness of road safety enforcement efforts is undermined, significantly impacting rider safety and public health outcomes (Urie et al., 2016; Kumphong et al., 2018).

Addressing these challenges requires strategic policy interventions, including reducing licensing fees, streamlining application processes through digital platforms, enforcing consistent and transparent procedures, and enhancing public education on the importance of licensing compliance (Hyder et al., 2007; Bhalla et al., 2020; Randall et al., 2024; Ntramah et al., 2023). Table 6.1 provides detailed insights into licensing practices, costs, timelines, compliance rates, and road safety implications across selected LMICs, clearly illustrating the critical need for context-sensitive policy solutions.

LMIC governments should consider the following integrated policy interventions to enhance licensing compliance and road safety outcomes:

- Reduce financial barriers: Subsidize licensing costs or introduce affordable fee structures to improve licensing uptake, particularly among low-income populations.
- Streamline licensing procedures: Simplify administrative processes and leverage digital systems to reduce delays and procedural complexity.
- Enforce mandatory training: Implement compulsory structured training programs to improve riding skills and road safety awareness.
- Enhance enforcement and public awareness: Increase targeted enforcement initiatives and awareness campaigns to reinforce the importance of licensing compliance and safe riding behaviors.

LMIC governments can significantly improve motorcycle licensing compliance and ultimately enhance road safety outcomes by implementing context-specific, integrated approaches that address both economic and procedural barriers (Table 6.2). Licensing cost data have been compiled from various credible online sources, including government portals, academic studies, road safety reports, and international agency publications.

Table 6.1. Comparative analysis of motorcycle licensing costs, timelines, and requirements in selected LMICs.

Country	Licensing Cost (USD)	Typical Timeline	Procedural Highlights
Kenya[a]	$55–$70	1–2 months	Learner permit (21 days), mandatory training (4 weeks), theory & practical tests
Nigeria[b]	$10–$17	2–3 months	Accredited driving school mandatory, biometric capture, theory & practical tests
India[c]	$8.5	1–2 months	30-day learner permit, theory & practical test; optional formal training
Bangladesh[d]	$33	3–4 months	Learner's permit, written/oral/practical tests; formal training recommended
Indonesia[e]	$6.5	1–2 weeks	Theory & practical tests mandatory; no formal training required but recommended
Viet Nam[f]	$20–$33	3–4 weeks	Mandatory 15-hour theory training, theory & practical exams
Brazil[g]	$500	3–6 months	Mandatory formal training (45 hrs theory + 20 hrs practical), medical & psychological exams

Notes:

a. Data obtained from National Transport and Safety Authority (NTSA) - https://www.ntsa.go.ke/
b. Data obtained from Federal Road Safety Corps (FRSC) - https://frsc.gov.ng/
c. Data obtained from Ministry of Road Transport and Highways (MoRTH) (https://morth.nic.in/); Parivahan Sarathi Portal (https://parivahan.gov.in/parivahan/)
d. Data obtained from Bangladesh Road Transport Authority (BRTA) - https://www.brta.gov.bd/
e. Data obtained from Indonesian National Police Traffic Corps (Korlantas Polri) - https://korlantas.polri.go.id/
f. Data obtained from Viet Nam Ministry of Transport (MOT) - https://mt.gov.vn/
g. Data obtained from Brazilian National Traffic Department (DENATRAN) - https://www.gov.br/infraestrutura/pt-br/assuntos/transito/denatran

Table 6.2. Impact of licensing costs and timelines on compliance rates and road safety outcomes.

Region	Licensing costs	Licensing timelines	Compliance rates	Dominant safety issues	Procedural and enforcement barriers
Sub-Saharan Africa	High	Lengthy	Low to Very Low	High crash rates due to widespread informal licensing	High costs, lengthy procedures, weak enforcement (Sumner et al., 2014; Howe, 2002).
South Asia	Moderate to Low	Moderate to Lengthy	Low to Moderate	Informal riding common, especially rural, leading to safety risks	Procedural delays, informality, weak rural enforcement (Miah et al., 2024; Kumphong et al., 2018).
Southeast Asia	Moderate	Moderate	Moderate	Structured training reduces risks; bribery and informal practices persist in some areas	Procedural complexity and informal practices; varying enforcement strength (Herwangi et al., 2017; Turner and Hạnh, 2019).
Latin America	High (Brazil)	Lengthy	Moderate (urban), Low (rural)	Mixed safety outcomes; training improves safety but high costs limit compliance	High barriers to formal licensing, informal practices prevalent; urban-rural compliance disparity (Oliveira et al., 2021; Waters et al., 2004).

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6.4 Training programs

Although the government prepares policies and regulations and private companies or platforms operate commercial motorcycles services, all parties should: (i) ensure proper and evidenced-based driver training, (ii) ensure drivers have and use safety equipment, and (iii) conduct emergency response training. This ensures a safe and skilled workforce, improving service quality and passenger safety.

Driver training

- Establish a comprehensive training program: Develop a training program for drivers that meets local regulatory and industry standards.
- Ongoing training and resources: Provide ongoing training and resources to ensure drivers remain informed about best practices and any changes in regulations or technology.
- Competency assessments: Assess drivers' competencies through evaluations or practical tests, focusing on defensive riding techniques to predict and avoid crashes.

Emergency response training

- Emergency response plans: Create and maintain emergency response plans outlining procedures for various emergency scenarios.
- Training and resources: Ensure that drivers receive training in emergency response techniques and have access to necessary resources such as first aid kits and communication tools.
- Regular drills: Conduct regular drills to ensure preparedness and compliance with emergency response protocols.

Advanced defensive riding techniques

These techniques anticipate and respond to potential hazards on the road. Training should include advanced defensive riding skills tailored to the challenges faced by commercial service drivers, such as navigating urban environments, dealing with heavy traffic, and riding in adverse weather condition (Table 6.3). Training in specific skills such as cornering, braking, and emergency maneuvers can improve overall safety.[1] Techniques for safely transporting passengers should also be emphasized.

Table 6.3. Additional training topics and their importance for commercial drivers.

Training/safety measure	Category	Rationale
Advanced defensive riding technique	Mandatory	Essential for navigating challenging road conditions and avoiding crashes.
Helmet and protective gear safety benefits	Mandatory	Helmets protect against head injuries, and protective gear (such as jackets, gloves, and boots) minimizes injury in the event of a fall or crash, enhancing overall safety.
Load management and stability	Mandatory	Crucial for maintaining motorcycle control and preventing crashes caused by insecure loads.
Efficient route planning	Mandatory	Minimizes exposure to risk by reducing riding time and distance.
Fatigue and stress management	Mandatory	Managing fatigue prevents crashes caused by impaired judgment.
Customer interaction and handling	Mandatory	Safe handling of goods minimizes risks during deliveries, especially during rush periods.
Regular vehicle maintenance checks	Mandatory	Daily pre-shift checks are vital for preventing mechanical failures.
Road safety regulation updates	Mandatory	Regular updates on local traffic laws, regulations, and safety standards ensure legal compliance and promote safe riding practices
Basic mechanical training	Recommended	Enhances driver independence in managing minor mechanical issues and ensures better vehicle upkeep.
First aid and emergency response (certification and crash management)	Recommended	While not always legally mandated, it improves driver preparedness in emergencies and strengthens the overall safety response.
Technology integration (navigation apps, safety technology awareness)	Recommended	Improves efficiency, safety monitoring and access to emergency assistance. Keeping up to date with technology is essential.
Sexual and gender based violence	Recommended	It equips drivers with knowledge on how to identify, prevent, and respond to such incidents, thereby fostering a safer and more respectful environment for all. Understanding these issues is crucial for the well-being and safety of the community.

6.5 Telematics

Telematics systems could play a pivotal role in enhancing safety by leveraging advanced technology to monitor and manage driving behaviors. These systems provide real-time tracking and data collection, which help in identifying and mitigating risky driving practices. Telematics can contribute significantly to reducing crashes, improving security, and promoting overall road safety by offering insights into driver performance and enabling timely interventions.

Benefits of telematics systems

Telematics systems significantly enhance motorcycle fleet management by providing real-time monitoring of driver behavior and operational performance. The specific advantages and functionalities of implementing telematics are outlined in Table 6.4. Many companies worldwide offer these systems and services, but it is crucial to choose one that meets the company's specific needs.

Table 6.4. Benefits of telematics systems.

Benefit	Details
Reduced risk	Recording risky driving behaviors (e.g., speeding, harsh braking), fewer motor vehicle crashes, and injuries
Improved security	GPS tracking and potential reduction in financial risk
Comprehensive tracking metrics	Real-time tracking capabilities, collection of essential data such as location, usage patterns, and driver behavior
Behavior monitoring	Detection of aggressive or unsafe driving behaviors through features like accelerometers and speeding detection
Driver performance reviews	Detailed performance reviews conducted, offering insights into areas of strength and opportunities for improvement
Disciplinary action	Violations or unsafe practices identified, which support taking corrective measures including educational interventions or disciplinary actions
Improved cost and efficiency	Better fleet and driver management, optimized work, reduced fuel and maintenance costs, and lower insurance premiums
Corporate social responsibility	Potential reduction in carbon footprint through fuel efficient driving, positive impact on local communities, and reduced traffic violations
Overall improvement	Safety and security of motorcycles and their employing companies improved

Common mistakes occur when organizations hire a service provider and sign contracts without thoroughly examining the system's capabilities. As a result, they may end up with a solution that fails to support their requirements for data review and analytics, ultimately hindering their ability to achieve goals related to safety, security, environmental sustainability, and social responsibility. Companies and industry must ensure legal compliance in the countries where they operate, particularly when making decisions regarding speed settings or adding additional cameras to the system. Consulting with the appropriate legal and land transportation safety advisors or authorities is imperative to establish acceptable over-speeding limits, considering the local risk context of your operations. This consideration should be part of the decision-making process, especially as this information may not always be available within the telematics provider.

Metrics from telematics

This section outlines typical metrics recorded by telematics. The list is not exhaustive and is not prioritized by significance; not all features are available on every product. It is also essential to consider how each metric supports the company objectives and drivers' safety. Integrating a telematics device with additional cameras offers several benefits for both motorcyclists and companies such as:

- In the event of a crash, footage from the cameras can serve as crucial evidence for insurance claims and liability disputes, protecting motorcyclists' or company rights.
- Camera footage can support claims of safe riding practices and deter potential disputes with other road users.
- Documentation of incidents can aid in crash investigations, potentially lowering insurance costs and legal liabilities.
- Companies can use recorded footage for training and coaching, enhancing the skills and safety awareness of their drivers.

Effective use of telematics systems relies heavily on selecting the right metrics to monitor and manage driver performance and safety. Table 6.5 provides a comprehensive overview of typical metrics collected by telematics devices, highlighting essential indicators that support operational safety, efficiency, and sustainability objectives. Additionally, the accompanying case (see Box 6.3) illustrates a practical example of how telematics technology can successfully enhance safety performance in real-world applications.

Table 6.5. Telematics metrics

Common metrics
• Speed • Harsh acceleration • Sudden braking or deceleration • Helmet use (monitored through an in-vehicle device or driver-facing camera) • GPS location tracking (geofencing, event locations, and route history) • Distance traveled (miles or kilometers) • Riding time or operational duration • Duration of idling • Fuel consumption and efficiency • Engine diagnostics (maintenance records) • Sharp turns or swerving
Supplementary metrics
• Video footage from cameras • Equipment tampering or obstruction of cameras • Signs of fatigue (such as yawning, blinking, closed eyes, or head/eyes drooping) • Distraction detection (such as mobile phone use, eating, drinking, smoking, or eyes off the road) • Crash detection • ECO score (environmental performance, carbon footprint indicator)
Calculated Score
• Rank score or driver behavior performance score or red-amber-green (RAG) score

Box 6.3. Application of telematics in improving safety: Talabat in United Arab Emirates

Context

In 2023, Talabat took a significant step toward improving road safety regionally with the introduction of the Rider Safety Telematics Solution for two-wheelers. This initiative reflects our ongoing commitment to fostering a safer and more responsible riding culture. By integrating telematics technology into the rider app, the system provides real-time insights into driving patterns, such as speed, phone usage and acceleration habits. Riders can voluntarily track their own safety scores, empowering them to adopt safer driving behaviors. The collected data also contributes to broader operational safety measures. This proactive approach not only enhances rider well-being but also contributes to safer roads for the entire community.

The challenge

The launch of the Rider Safety Telematics Solution introduced significant potential benefits, but its initial adoption in the UAE faced challenges. Many riders were unfamiliar with the technology and its role in enhancing their safety. As of June 2023, the adoption rate was 0%, prompting the Talabat team to explore strategies to drive adoption within the rider community.

The solution

To overcome telematics adoption challenges, Talabat implemented a comprehensive strategy focused on rider education, engagement and support. Clear and consistent communication through the rider app highlighted the personal safety benefits of telematics. This communication channel helped riders understand how the technology detects risky driving behaviors, while promoting safer habits. The dispatch team played a crucial role by proactively reaching out to riders during off-shift hours, offering guidance on activating telematics and improving safety scores. On-ground safety training sessions, led by patrol teams, provided hands-on support, ensuring riders felt confident using the system. To drive further adoption, Talabat introduced monthly incentives for riders with the highest safety scores, fostering a culture of recognition and motivation around safe driving practices.

The impact

The introduction of telematics led to a significant increase in adoption rates and notable improvements in rider safety. In the UAE, adoption surged from 0% to 93% between June 2023 and January 2024. This progress was accompanied by measurable safety gains—among riders who engaged directly with the dispatch team, crash rates dropped to 0% in the month following their interaction. These results underscore the effectiveness of telematics when combined with targeted rider engagement. Beyond reducing incidents, the initiative enhanced safety awareness and fostered a culture where riders are motivated to prioritize responsible driving, contributing to a safer and more resilient delivery network. By the end of 2024, after complete rollout, these insights drove Talabat to a 94% adoption rate, highlighting the success of awareness and engagement efforts.

Note:

a. Extracted from Talabat, Integrated Annual Report 2024.

Note

1. Extracted from Motorcycle Advice and Training, The Royal Society for the Prevention of Accidents, UK, https://www.rospa.com/road-safety/advice-and-information/cyclists-and-motorcyclists/motorcycle-safety-and-training

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Chapter 7: Safe and Certified Helmets

Chapter summary

This chapter emphasizes that certified helmets are the most effective measure for preventing traumatic brain injuries and fatalities among motorcyclists, reducing the risk of death by more than 40 percent and severe head injuries by nearly 74 percent. It explores global helmet certification standards—Economic Commission for Europe (ECE), Department of Transportation (DOT), Snell Foundation (Snell), Australia/New Zealand (AS/NZS), Japanese Industrial Standard (JIS)—highlighting variations in testing methods, including impact, penetration, and environmental resilience. Robust certification schemes—such as UN Regulation No. 22—ensure helmet quality through type approvals, continuous production monitoring, and rigorous market surveillance. Yet, nonstandard, cheaper helmets remain widespread, especially in LMICs because of affordability challenges. Initiatives like the Safe & Affordable Helmet Initiative and BodaPlus demonstrate practical approaches for enhancing accessibility, enforcing standards, and promoting consumer education, ultimately improving global helmet safety.

Key challenges identified

Key challenges include inconsistent global helmet standards, inadequate enforcement mechanisms, proliferation of noncertified helmets, affordability barriers preventing widespread adoption of certified helmets, and limited consumer awareness of helmet certification importance.

Practical recommendations

- Harmonized certification standards: Promote global adoption of recognized, rigorous standards such as ECE 22.06.
- Enhanced certification and surveillance: Strengthen certification processes with mandatory batch testing, independent accreditation, and regular market surveillance.

- Enforcement of helmet standards: Conduct stringent checks at borders, retail points, and through random audits to curb substandard helmet proliferation.
- Affordable access: Support local manufacturing, bulk procurement programs, and offer tax incentives or subsidies to reduce helmet costs.
- Consumer awareness and education: Implement clear labeling and targeted educational campaigns on the safety benefits and cost-effectiveness of certified helmets.

Benefits to stakeholders

- Government uses guidance on adopting and enforcing standardized helmet regulations, enhancing enforcement capacity, and supporting affordable access initiatives.
- Private sector outlines strategies to produce affordable, high-quality helmets, and highlights the economic benefits of adhering to globally recognized safety standards.
- Drivers and passengers increase understanding of helmet certification importance, aiding informed choices that significantly enhance personal safety and reduce injury severity in crashes.

7.1 Introduction

Mandatory motorcycle helmet use is the single most effective measure to prevent traumatic brain injuries among motorcyclists. According to the WHO Global Status Report on Road Safety 2023, properly wearing a certified helmet can lower the risk of death by over 40 percent and the risk of severe head injury by nearly 74 percent (WHO, 2023). Despite this compelling evidence, the regulatory and certification landscape for helmets varies widely, reflecting differences in testing, enforcement, and local needs.

7.2 Overview of major certification standards

Multiple major standards govern helmet safety globally, each featuring unique tests and thresholds.[1]

ECE 22.05/22.06 (UNECE Regulation)

- Widely adopted across Europe and other regions.
- Tests include impact attenuation or Amax ≤ 275 g-force (g), head injury criterion (HIC ≤ 2400) and penetration.
- Uses flat and curb anvil drop tests at higher velocities such as ~7.5 meters per second (m/s).
- Emphasizes ongoing batch control plus ultraviolet (UV) or environmental resilience.

DOT (FMVSS 218 – United States)

- Mandatory in the U.S. but relies on self-certification rather than official type approval.
- Higher peak acceleration allowed (up to 400 g), includes dwell-time limits of T150g ≤ 4 meters per second.
- Uses a vertically guided head form and flat and hemispherical anvils.

Snell M2010/M2015

- Voluntary standard known for demanding high severity impact requirements.
- Often leads to heavier helmets excelling in multiple impact scenarios.
- Emphasizes multiple hits to the same location.

AS/NZS 1698 (Australia/New Zealand)

- Includes tests for heat, cold, and humidity, matching diverse climates.
- Rigorously checks impact, penetration, retention.
- Sometimes references or aligns with UNECE guidelines for broader recognition.

JIS T 8133 (Japan)

- Tailored to Japanese conditions, with specialized environmental and impact variations.
- Often recognized regionally but less globally widespread.

7.3 Role of certification schemes

Importance of an effective certification system

A technical standard alone does not ensure that finished helmets truly meet those criteria. Certification schemes form the bridge, mandating[2]:

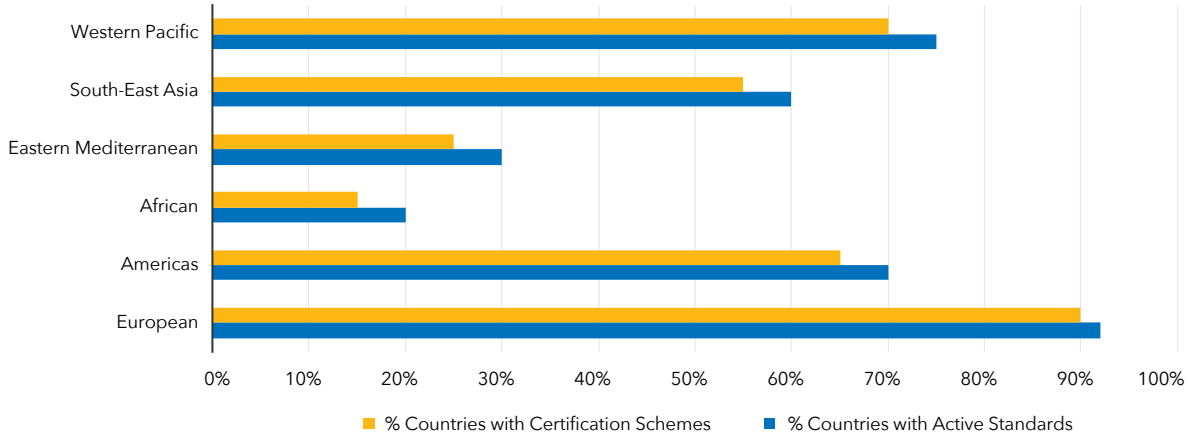
- Type approval – Formal lab tests before market entry.
- Batch or continuous control – Random sampling to ensure production consistency.
- Market surveillance – Checking retailers or importers to intercept substandard products.
- Independent accreditation – Certification bodies and labs accredited by recognized agencies such as the International Laboratory Accreditation Cooperation (ILAC).

UN Regulation No. 22 stands out for requiring independent third-party oversight and ongoing batch testing, preventing manufacturers from dumping subpar batches on the market.

Analysis of uptake to certification schemes

The data in Figure 7.1 and Table 7.1 indicate that Europe leads in both the percentage of countries with active helmet standards as well as certification schemes, largely due to widespread adoption of UN Regulation No. 22. The Americas follow with moderate levels of coverage, reflecting the dominance of the DOT standard, FMVSS 218. In contrast, Africa and the eastern Mediterranean region show relatively low adoption, revealing gaps in regulatory structures and enforcement capacity. South-East Asia demonstrates a midrange uptake, relying on local standards such as IS 4151 in India. Finally, the western Pacific region aligns more closely with Australia's AS 1698. These figures underscore both global diversity and regional disparities in implementing and enforcing helmet certification standards, pointing to a need for targeted interventions to bridge the gaps.

Figure 7.1. Uptake of certification schemes in the various regions.



Source: World Bank. 2025.

Table 7.1. Percentage of uptake of certification standards.

Region	% Countries with Active Standards	% Countries with Certification Schemes	Top Standard
European	92%	90%	UN Reg 22-05/06
Americas	70%	65%	FMVSS 218 (DOT)
African	20%	15%	UN Reg 22-05/06 (limited)
Eastern Mediterranean	30%	25%	UN Reg 22-05/06 (partial)
South-East Asia	60%	55%	IS 4151 (India)
Western Pacific	75%	70%	AS 1698 (Australia)

Source: World Bank. 2025.

Examples of certification schemes

In practice, different regions adopt or adapt their own certification processes, often building on recognized standards (Figure 7.2).

UN Regulation No. 22

- Type approval: Helmets must pass accredited lab testing before sale.
- Production control: Each batch is randomly tested to confirm ongoing compliance.
- Labeling and marking: Helmets carry an "E-mark" plus an approval number.
- Market surveillance: Regulatory authorities can seize noncompliant helmets from retailers.

Japan

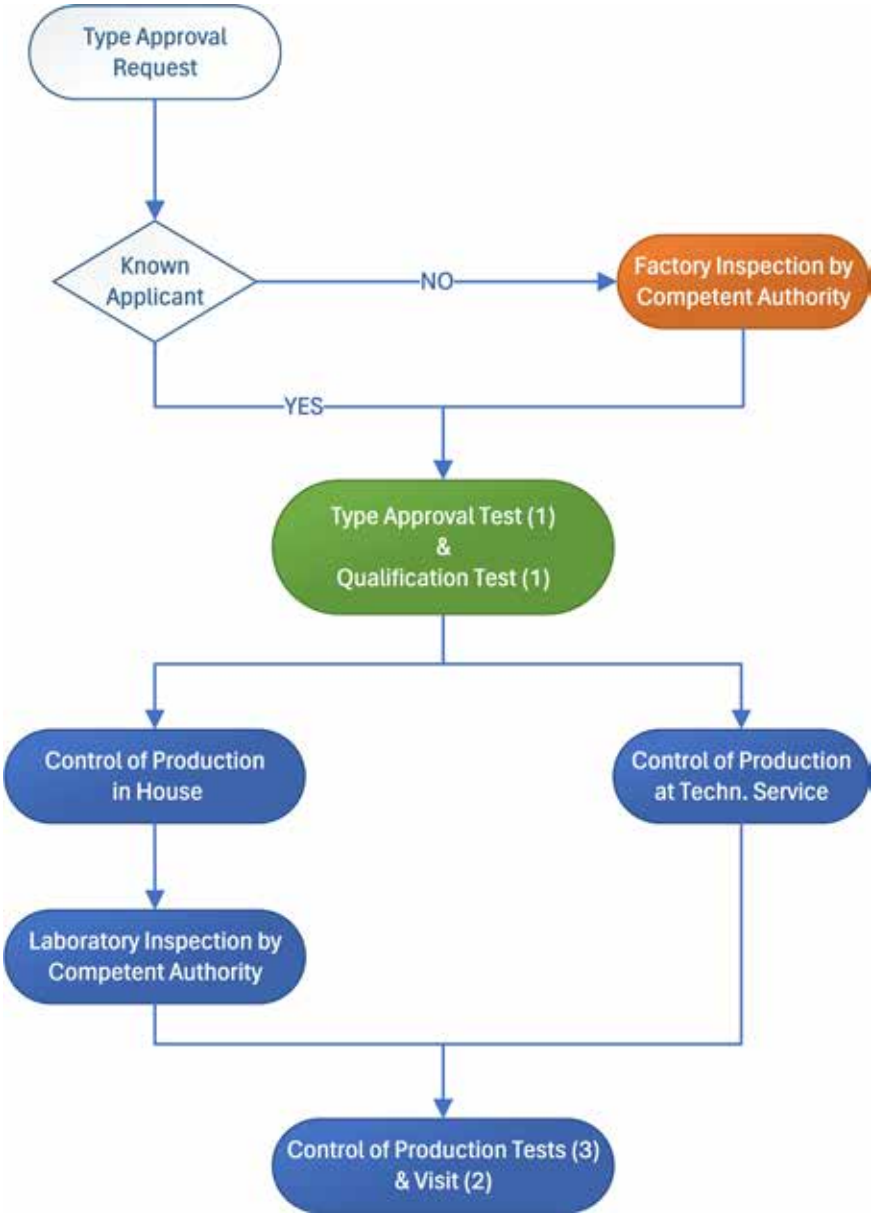
- National type approval: Mostly references JIS T 8133 as the technical basis.
- Continuous monitoring: Government agencies coordinate with industry to maintain consistent product quality.
- Special focus: Environmental tests of temperature or humidity reflect local climate and real-world usage.

Korea

- Korean safety standard (KSC): Based partly on ECE and local conditions of high humidity seasons.
- Lab testing and accreditation: Government-approved labs test impact, retention, and field of vision.
- Random audits: Korean regulators conduct spot checks on manufacturers and retailers.

Each scheme underscores the need for both robust technical requirements and thorough follow-up, ensuring the market remains free of substandard products.

Figure 7.2. Examples of certification schemes (UN Regulation)[a]



Note:

a. For reference, the complete text of UN Regulation No. 22-05, which specifies the standards for motorcycle helmets and visors, is available at: https://unece.org/sites/default/files/2021-08/R022r5e.pdf.

Source: United Nations. 2022.

Nonstandard helmets and enforcement gaps

In many low and middle-income countries:[3]

- Noncertified or counterfeit helmets proliferate, often cheaply made with inferior impact resistance.
- Minimal enforcement or unclear labeling fosters confusion among consumers.
- Even with formal bans, sporadic or under resourced enforcement at entry points and retailers allows substandard helmets to spread (Box 7.1).

Box 7.1. Affordability: A critical barrier

Context

A recent white paper from the Global Alliance of NGOs for Road Safety underscores why cost is such a pivotal factor for many drivers.[a] While helmet usage is widely recognized as lifesaving, the paper's research across multiple countries consistently found that nonstandard helmets are often two or three times cheaper than properly certified ones. As a result, drivers in low-income settings may perceive themselves forced to opt for substandard headgear—leaving them with a false sense of security.

Key insights

- Helmet market is flooded with nonstandard helmets: Minimal enforcement of the helmet market lets unsafe nonstandard helmets proliferate.
- Price is a factor in choosing helmets: While safety is an appeal, motorcycle riders consider different factors when choosing helmets—price being one of them along with comfort, aesthetics, functionality, brand and certification.
- Nonstandard helmets are cheaper than certified helmets: As a result, motorcycle riders can opt for nonstandard helmets, leaving them with a false sense of security. Cheaper but unsafe nonstandard helmets undercut truly certified helmets.

Solutions in practice

The white paper highlights the need for government and industry collaboration to ensure price does not remain a barrier to motorcycle riders wearing certified helmets. Strategies to help keep down prices of certified helmets, ensuring helmets are both safe and affordable include:

- Local manufacturing of helmets in accordance with the national helmet safety standard to minimize import and distribution costs added to helmet prices.
- Local testing of helmets to certify helmets and enforce the helmet market in accordance with the national helmet safety standard.
- Procurement of standard helmets by businesses that run motorcycle transportation for employees and contractors as part of their occupational health and safety as well as for customers.

Note:

a. Global Alliance of NGOs for Road Safety (2025). *Making Safe Helmets a Reality for All: White Paper.*

Regional variations and harmonization

Climate and road conditions

- Hot or humid conditions: Standards like AS/NZS 1698, JIS T 8133, and the Korean KSC incorporate environmental preconditioning.
- LMICs: Conditions vary from high-speed highways to poorly maintained local roads, often making penetration tests, as with ECE 22.05, highly relevant.

Full-face versus open-face helmets

Coverage and safety:

- Full-face helmets offer superior head and chin coverage, significantly reducing injuries in high impact crashes; open-face helmets provide more airflow and peripheral vision but exposes the face to greater risk.

Adoption factors:

- Driver preference: Open-face helmets often favored for comfort in warm climates.
- Cost and faces: Open-face models may be cheaper but carry higher long-term risk if injuries occur.

Key recommendations

- Promote full-face use: Stress enhanced protection in public campaigns and enforcement efforts.
- Strengthen standards enforcement: Ensure all helmet types meet robust certifications.
- Encourage education and incentives: Offer targeted outreach and potential subsidies to support safer designs.

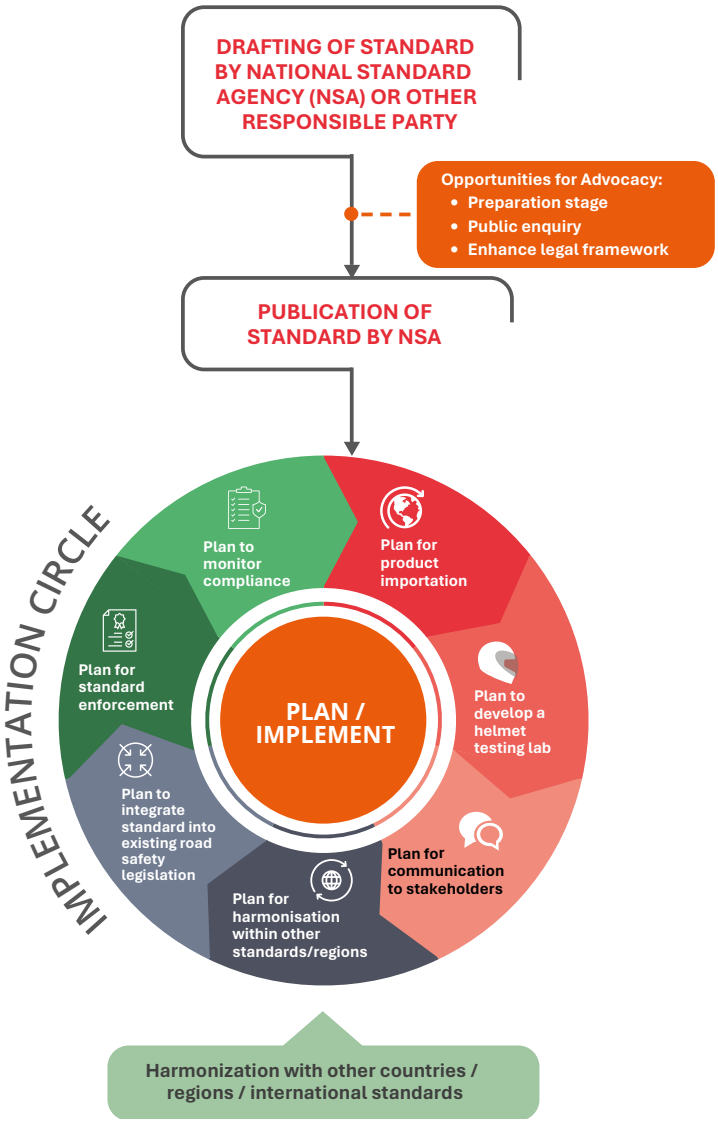
Moving toward unified standards

Efforts to harmonize helmet standards[4] worldwide aim to:

- Simplify cross border trade and regulatory acceptance.
- Reduce manufacturer costs by targeting a single recognized standard.
- Improve global helmet quality, particularly where certification laws are still developing.

A standard flowchart shows how to develop and implement a helmet standard (Figure 7.3) (Smith et al., 2025).

Figure 7.3. Flowchart of steps to develop and implement a helmet standard.



Source: Global Road Safety Partnership, 2025

Priorities

- Adopt recognized standards: Encourage referencing ECE 22.06 or an equivalent advanced standard if local rules are outdated.
- Enhance certification schemes: Mandate type approval, random batch control, and accredited labs for final acceptance. Implement in-country or regional helmet testing to streamline the approval process and support local manufacturing while promoting quality control and consumer safety.
- Strengthen enforcement: Conduct customs screening for noncompliant imports, market checks, and fines for retailers selling subpar helmets.
- Promote education and affordability: Offer subsidies or tax breaks to keep certified helmets competitively priced and educate consumers on legitimate certification marks.
- Integrate advanced tests: As rotational injury science evolves, incorporate oblique impacts, improved helmet retention testing, and possibly new brain injury criteria.

- Encourage local innovation and research: Foster partnerships between manufacturers, universities, and research institutions to promote innovation in helmet design and materials. Supporting research initiatives can lead to the development of safer, more effective helmets while also enhancing local manufacturing capabilities and stimulating the economy (Table 7.2).

Moreover, the global community and governments should explore strategies to reduce prices and increase affordability of helmets, while considering the impact of higher standards on both affordability and the target market (Box 7.2 and Box 7.3).

7.4 Facts and myths about helmet use[5]

MYTH	FACT
Helmets cause neck or spinal cord injuries.	Research has proven that helmets conforming to international regulations and correctly worn do not cause neck or spinal cord injuries.
Helmets impair hearing and sight.	Helmets do not affect peripheral vision or contribute to crashes. Helmets may reduce the loudness of noises but do not affect the ability of a rider to distinguish between sounds. Some studies have indicated that properly fitted helmets can actually improve the ability to hear by reducing noise from the wind (UN Regulation No. 22 covers both these points).
Motorcycle helmet laws violate individual rights.	All road safety laws require some action from individuals—e.g., wearing safety-belts, not driving while impaired, strapping a child into a child restraint system, or stopping at a stop sign. These traffic rules are accepted because all motorists recognize that failing to obey them could create a serious danger to themselves and others. Motorcycle helmet laws have exactly the same purpose.
Fatality rates are lower without helmet laws.	Studies conducted in two states in the United States that recently repealed their motorcycle helmet laws showed that deaths from head injuries actually increased following the repeal of the law.
Any helmet is better than no helmet.	A low-quality helmet might give the rider a false sense of protection. In case of a crash, a rider using a low-quality helmet could get more severely injured or even killed, sending the false message that all helmets are useless, thus threatening helmet-wearing campaigns.
UN Regulation No. 22 will encourage the sale of fake helmets.	The following elements are established within the type approval system: the conformity of production procedures; exchange of information among T.A.A.s on type approvals granted, counterfeit products, and products not meeting the requirements. All this aims to prevent the delivery of fake helmets to the market.
There is no need to make helmet use mandatory for all: age-specific motorcycle helmet laws are effective/sufficient.	Age-specific helmet laws are more difficult to enforce because it is difficult for the enforcement community to identify the age of a child when he or she is riding past on a motorcycle. Consequently, age-specific laws are less effective than those which are related to society as a whole.
Motorcycles are a small percentage of registered vehicles, thus motorcycle crashes represent a minor burden to society.	Whether motorcycles make up a small proportion of vehicles (as in some high-income countries) or the bulk of vehicle fleets (as in many Asian countries), the fact that motorcyclists are about 27 times more likely than passenger car occupants to die in a traffic crash and about 6 times more likely to be injured means that crashes are a significant problem in all societies where their use is common. (WHO, 2006)
UN Regulation No. 22 approved helmets are not suitable for tropical climates.	The ECE 22 helmet requirements are performance-oriented and not design-oriented. Therefore, they do not prevent sufficient ventilation, making these helmets suitable for tropical climates by keeping the level of safety.
Motorcycles helmets in accordance with UN Regulation No. 22 are too expensive for users in low-income countries.	The relative costs of helmets go as low as one percent or as high as 10 percent of the motorcycle price. Therefore, helmets should be affordable for buyers of new or second-hand motorcycles in low-income countries too.

References

UNECE. 2016. The United Nations Motorcycle Helmet Study. Part of WP 29. https://unece.org/DAM/trans/publications/WP29/United_Nations_Motorcycle_Helmet_Study.pdf

Box 7.2. Mandatory Sale of Certified Helmets with Motorcycles – Morocco and India

During the Fourth Global Ministerial Conference on Road Safety held in Marrakech in February, 2025, Moroccan government announced the mandatory inclusion of two certified helmets with purchase of every motorcycle[a]. A new road safety initiative aligned with the global Safe & Affordable Helmet Initiative was also launched during the conference. This initiative focuses explicitly on the safety of motorcycle and tricycle riders, recognizing their disproportionate representation in road fatalities—accounting for over 40% of all road fatalities in Morocco. The initial phase distributed 50,000 helmets certified to international safety standards, specifically targeting the high concentration of motorcyclists in Marrakech, a city chosen for its notably elevated motorcycle crash rate.

Similarly, in India, the Ministry of Road Transport and Highways in March 2025 mandated that all new two-wheelers sold in the country be accompanied by two ISI-certified helmets, extending coverage to both riders and pillion passengers[b]. This regulation, aligned with BIS standard IS 4151:2015, aims to address persistent gaps in helmet use and reduce fatalities from head injuries, which are a leading cause of death in motorcycle crashes. Dealers are now legally required to stock and distribute certified helmets, with enforcement backed by regular inspections and penalties for non-compliance. While the rule may slightly increase vehicle costs and impose logistical demands on dealerships and helmet manufacturers, it is a strategic move to institutionalize helmet use and improve road safety outcomes in India.

Notes:

a. Morocco launches major road safety initiative in Marrakech with international support," Hespress EN, February 17, 2025. Retrieved from: https://en.hespress.com/103823-morocco-launches-major-road-safety-initiative-in-marrakech-with-international-support.html

b. New Rule Mandates Two Helmets with Every Two-Wheeler Purchase in India. Retrieved from: https://sgttimes.com/india-helmet-rule-two-wheeler-buyers-safety/

Box 7.3. BodaPlus—Affordable helmet manufacturing for safer motorcycle transport in East Africa

BodaPlus is a Kenyan-based helmet manufacturer catering primarily to the boda boda (motorcycle taxi) sector. The company focuses on delivering affordable, safety-compliant helmets that meet Kenyan Standards (KS 77) and operates from a facility in Ruiru. With an annual output exceeding 480,000 helmets, BodaPlus serves not only Kenya but also exports to neighboring markets like Uganda, Tanzania, Rwanda, and the Democratic Republic of Congo. Their customer base comprises predominantly low income, informal motorcycle operators who require cost effective yet reliable safety gear, often earning USD 3–10 per day.

BodaPlus full-face Helmet

BodaPlus open-face helmet

Core strategies and value proposition

- Locally integrated production: From plastic injection molding to expanded polystyrene (EPS) fabrication and final assembly, BodaPlus manages the entire value chain. This local manufacturing model helps reduce costs, create jobs, and maintain tighter quality oversight, thus supporting both domestic and regional demand.
- Affordability and tiered pricing: BodaPlus offers a good–better–best pricing strategy, with entry level open-face helmets priced approximately KES 900–1,300 (USD 7–10). BodaPlus balances the need for basic safety with the realities of informal transport by tailoring design and features to different budgets.

Targeted partnerships and distribution

- Motorcycle cooperatives and SACCOs: Bulk helmet purchases and financing schemes for large driver groups.
- Ride-hailing platforms: Partnerships with Bolt, SafeBoda, and Uber to supply standardized helmets during onboarding.
- Government and NGOs: Collaborations for road safety campaigns and distribution in high risk or rural areas.

Regulatory alignment and future aspirations

According to BodaPlus, although it adheres to local KS 77 standards, it is actively working toward ECE 22.05 certification. This move would expand export potential and significantly enhance driver and passenger protection. Securing international accreditation, however, is expensive and complicated by the region's lack of accredited testing labs.

Challenges and opportunities

- Certification gaps: Limited local laboratory infrastructure and inconsistent helmet use enforcement in rural areas undermine demand for higher standard helmets. Border surveillance, compulsory labeling will help reduce market infiltration by substandard imports.
- Cost sensitivity and market informality: Most boda boda operators favor cheaper, uncertified helmets—if they wear helmets at all. BodaPlus's local manufacturing approach helps narrow the price gap, but continued government or donor incentives remain essential for widespread adoption (e.g., subsidies, duty exemptions).
- Technical innovations: BodaPlus invests in climate optimized materials, improved ventilation, and modular designs, aiming to enhance comfort and durability for drivers who use helmets for extended shifts in hot, humid conditions. Integrating Bluetooth communication or crash sensors could elevate safety further—though affordability remains paramount.
- Regional standardization push: More African nations consider aligning with UN or ECE helmet standards. Early adoption of global best practices would secure the company's market differentiation, foster public trust, and potentially unlock new funding streams from development partners.

Outlook and key takeaways

- Market transformation: With motorcycle transport booming across East Africa, growing momentum moves toward stricter helmet laws and recognized safety standards, creating both demands and pressures for local manufacturers.
- Ecosystem approach: Overcoming barriers—such as informal driver segments, weak enforcement, and testing constraints—requires a coordinated effort among governments, NGOs, donors, and private-sector players like BodaPlus.
- Local production, global standards: BodaPlus exemplifies how a domestically rooted manufacturer can address the twin challenges of cost and compliance, offering practical solutions (e.g., microfinance partnerships, tiered pricing) while moving toward international certification.
- Impact on road safety: By ensuring that low income drivers have access to affordable, higher standard helmets, BodaPlus contributes to reducing motorcycle-related head injuries and fatalities—an urgent priority in a region where motorcycles form an essential, yet vulnerable, mode of transport.

Notes

1. McIntosh, A., & Grzebieta, R. (2013, May). Motorcycle helmet standards–harmonisation and specialisation?. In *Proceedings of the 23rd International Technical Conference on the Enhanced Safety of Vehicles (ESV), Seoul, Korea* (pp. 27-30).
2. Extracted from UN ECE 22.06, https://unece.org/transport/documents/2021/08/standards/un-regulation-no-22-rev5-06-series
3. Radzuan, N. Q., Hassan, M. H. A., Omar, M. N., & Abu Kassim, K. A. (2023, February). The Protective Performance of Different Types of Motorcycle Helmets in Terms of HIC and BrIC. In *International Human Engineering Symposium* (pp. 249-262). Singapore: Springer Nature Singapore.
4. Stanford, G., & Gibson, T. (2016, September). UNECE Regulation 22.05 motorcycle helmets in Australia. In *Australasian Road Safety Conference, 2016, Canberra, ACT, Australia*.
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PART 3.
Implementation Guide for Stakeholders

Chapter 8. Financing New Commercial Motorcycles

Chapter Summary

Financial institutions play a crucial role in facilitating the growth of the commercial motorcycle sector by offering tailored financing solutions such as loans, leasing, and hire–purchase agreements. These options significantly reduce upfront costs, allowing businesses and individual entrepreneurs to enter or expand within the market more efficiently. Integrating financing with safety compliance—such as mandatory insurance and certified helmets—can further enhance responsible motorcycle operations. The evolving market, increasingly shifting toward electric vehicles, presents unique financing challenges and opportunities, notably around battery costs and lifecycle management. Key considerations for obtaining financing include assessing creditworthiness, comprehensive cost management, choosing the appropriate financial product, ensuring market viability, and maintaining regulatory compliance.

Key Challenges Identified

Major challenges include high upfront motorcycle costs, difficulty assessing creditworthiness, particularly for startups, complex valuation of electric motorcycle components like batteries, affordability barriers, and gaps in linking financing with essential safety compliance measures.

Practical recommendations

- Tailored financing solutions: Offer specialized products like flexible leasing options, loans, or hire–purchase agreements that match the business model and cash flow needs.
- Integrate safety requirements: Embed mandatory insurance and certified helmets into financing agreements, incentivizing compliance with road safety standards.
- Support electric vehicle financing: Develop innovative solutions such as battery leasing or usage-based financing models to address challenges unique to electric motorcycles.
- Enhance affordability: Encourage financing structures that lower upfront investment, utilizing subsidies or partnerships with manufacturers and fleet providers.

- Simplify approval processes: Implement clear, accessible guidelines and offer educational support to improve borrowers' understanding of available financial products.

Benefits to stakeholders

- Government uses insights into developing supportive regulatory frameworks and incentivizing financial institutions to embed safety and environmental standards in financing products.
- Private sector like financial institutions and businesses can structure appropriate and responsible financing solutions, aligning financial objectives with safety compliance and market trends.
- Drivers and entrepreneurs can use better financing options, integrate safety measures, and optimally align their financing strategy with long-term business sustainability.

8.1 Introduction

The use of motorcycles for commercial purposes has experienced recent and significant growth on account of their cost effectiveness, fuel efficiency, and flexibility in navigating urban landscapes. The upfront costs can be a substantial barrier for businesses and individuals looking to start or expand their commercial motorcycle operations. Financial agencies play a crucial role by providing financing solutions tailored to the unique needs of commercial motorcycle operators.

8.2 Integrating safety compliance into financing solutions

In the rapidly evolving commercial motorcycle market, financing plays a pivotal role in ensuring compliance with safety regulations, particularly with insurance and protective gear. As business models expand, the need for reliable financing services becomes paramount. Financial agencies can embed requirements for compulsory insurance within loan agreements to link financing solutions effectively with mandated safety compliance. They align directly with the safety standards (Chapter 5) by necessitating the acquisition of insurance before financing a motorcycle. This measure not only secures the financial institution's investment but also ensures that commercial motorcyclists possess the necessary coverage to operate legally and safely.

Furthermore, financing packages could benefit from incorporating a curated list of certified helmets (Chapter 7). Lenders foster a culture of safety from the outset by requiring that borrowers either purchase helmets from a predefined list or include them in the financing agreement. This approach emphasizes responsible riding practices, ensuring that operators are adequately protected against head injuries, a leading concern in motorcycle crashes.

Moreover, various financing options such as loans, lease-to-own arrangements, and hire–purchase agreements can be structured strategically to emphasize these safety requirements. For instance, lenders may consider interest rate incentives for borrowers who comply with safety measures, including maintaining a valid insurance policy and using certified safety gear. This not only encourages safer behavior among drivers but also highlights a commitment to public safety.

In addition, equipping financing solutions with educational components about the importance of insurance and helmet usage can enhance compliance and awareness. Financial providers can offer workshops or informational sessions for new borrowers, explaining coverage details and benefits.

Financial institutions not only protect their investments but also champion safer riding practices among commercial motorcyclists by linking financing directly to safety compliance. This strategic integration contributes to reducing crashes and fatalities within the motorcycle industry. Ultimately it enhances the overall safety landscape while concurrently promoting the growth of responsible motorcycle operations. In doing so, a sustainable and safety-focused framework for commercial motorcycle use can emerge, benefiting both the operators and the wider community.

8.3 Market for commercial motorcycles

The commercial motorcycle market has evolved significantly, with applications ranging from delivery services to ride hailing. This flexibility not only allows businesses to reduce operational costs but also enables quicker service delivery, serving to customer demands effectively. Entrepreneurs entering this market often require proper financing to cover costs such as purchasing motorcycles, insurance, and maintenance. Commercial motorcycles are mostly used by

delivery partners for either delivering goods or for ride-hailing services. E-commerce or food delivery companies typically partner with delivery agents, logistics companies, and rental companies for last mile delivery. Ride-hailing companies' partner with delivery agents who use personal vehicles or rent them. The delivery partner often rents or leases the motorcycle from the logistics company which owns the vehicle (Table 8.1).

Table 8.1. Commercial motorcycle financing value chain

Service provider	Logistics partner	Delivery partner	Financing intermediary
E-commerce / grocery or food delivery companies	Provides vehicles and delivery partners. Logistics partner either owns the vehicle or gets it on lease from asset financing companies.	Typically pays daily rentals or monthly rentals.	Logistics partner takes a loan from the financing intermediary to finance the motorcycle. They may also lease it from asset financing companies, who in turn will own the motorcycles.
Motorcycle taxis	None — they directly work with driver partners.	Driver partner owns the motorcycle or rents it from the logistics partner.	Driver partner will finance the motorcycle through a financial intermediary.

The commercial two-wheeler industry is rapidly shifting toward EVs but financing options for these vehicles are still evolving (see Chapter 4). One of the key challenges is that EV financing differs significantly from traditional motorcycle financing, particularly due to the high cost of batteries and in some markets higher insurance cost based on new products.

Batteries account for a significant portion of an electric two-wheeler's total cost, making it difficult for lenders to assess their remaining lifespan and value. Since vehicles have traditionally served as collateral in case of loan defaults, financial institutions require greater assurance and access to accurate information about the vehicle's condition and the residual value of its components. Given this challenge, fleet management companies have now started using their own software or battery management systems that provide real-time data on the vehicles and battery condition.

Additionally, a growing number of new age EV financing companies are innovating their business models. Some now offer financing options that exclude the battery, allowing customers to lease batteries separately. This reduces the upfront cost of EV ownership and addresses concerns around battery degradation and residual value.

Both non-banking financial companies (NBFCs) and traditional banks provide financial products such as loans, leases, and hire–purchase agreements. However, NBFCs tend to offer greater flexibility in financing options, making them a preferred choice for many businesses and individuals (Table 8.2).

Table 8.2. Examples of financial intermediaries offer lending for commercial motorcycles in Asia and Africa.

Country	Company Name	Type	Remarks
India	Shriram City Union Finance Limited	NBFC	Provides two-wheeler financing solutions across India.
	Tata Capital Financial Services Limited	NBFC	Offers retail finance options for two-wheelers, including zero down payment.
	Ride Finance (Deccan Finance Limited)	NBFC	Finances new and used motorcycles, including electric two-wheelers.
Bangladesh	United Finance Limited	NBFC	Offers two-wheeler financing with a wide branch network across Bangladesh.
	IDLC Finance PLC	NBFC	Provides SME and consumer finance, including two-wheeler loans.
Nepal	Hulas FinServ	NBFC	Offers competitive two-wheeler loan options with flexible tenure.
Sri Lanka	Hatton National Bank (HNB)	Bank	Offers comprehensive vehicle financing solutions, including two-wheelers.
	Citizens Development Business Finance PLC	NBFC	Provides two-wheeler financing as part of its financial services portfolio.
Thailand	Krungsri Auto (Bank of Ayudhya PCL)	Bank	Major player in Thailand's automotive financing, including two-wheelers.
	TMBThanachart Bank (TTB)	Bank	Specialized in vehicle financing, including fleet-financing for two-wheelers.
Africa	Watu Credit	NBFC	Provides two and three-wheeler asset financing across multiple African countries.

8.4 Types of financing solutions

Financial agencies understand the complexities of the market and cater their services to meet the needs of these businesses. They offer a range of financial products, including loans, leases, and hire purchase agreements, specifically designed to facilitate the procurement of motorcycles for commercial use.

Motorcycle purchase loans

Many financial institutions offer specific loan products for purchasing motorcycles. These loans generally come with competitive interest rates and repayment terms that align with the cash flow cycles of businesses. The loan amount can be influenced by factors such as the borrower's credit history, the value of the motorcycle, and the overall business model. In case of EVs, some lenders may allow the borrower a choice of buying vehicles without battery and taking battery on lease.

Leasing options

Leasing is an attractive alternative for businesses that may not want to invest a large capital upfront. Under a leasing agreement, businesses can use motorcycles for a specific period while paying a monthly fee. At the end of the lease term, they may have the option to purchase the motorcycle at a predetermined price. This can help businesses manage their cash flow effectively.

Hire purchase agreements

This is a common arrangement that allows businesses to pay an initial deposit followed by a series of installments. Once the total amount has been paid, ownership of the motorcycle is transferred to the business. This method is beneficial for businesses that want to leverage the asset while gradually paying off its value.

8.5 Considerations for financing commercial motorcycles

When seeking financing for commercial motorcycles at the operational management level, several critical considerations come into play:

Creditworthiness

Financial agencies typically assess the creditworthiness of the borrower. A strong credit score can lead to better interest rates and loan terms. Conversely, businesses with poor credit histories may struggle to secure financing or face higher rates. For example, a delivery company with a solid credit history may obtain more favorable loan terms compared to a new startup with limited credit history. Also, in some cases governments can publish a regulatory act to promote or subsidize startups of businesses.

Cost management

Businesses need to evaluate all associated costs beyond just the purchase price of the motorcycle. This includes insurance, maintenance, fuel, and potential downtime, salaries and other overheads. A comprehensive understanding of these costs will enable better financial planning. Nonetheless, usually starting business should be a smooth process were purchasing a motorcycle and obtaining a valid license will be 80 percent of the business requirements. For instance, if motorcyclists want to use service platforms, they must account for fuel expenses and maintenance for their delivery motorcycles. Additionally, registration for value added tax (VAT) is required if one wishes to create a fleet to deliver food using the Uber platform.[1] Services provided through commercial two-wheelers, such as delivery services, may attract general sales tax (GST) in India, and varies by nature of service. Commercial motorcyclists are also subject to higher road taxes in some Indian states as it varies based on engine capacity and usage.

Choosing the right financial product

Depending on the business model—whether it relies on high volume or seasonal fluctuations, different financing products may be more appropriate. Businesses must assess which option aligns best with their operational strategies. For example, a seasonal delivery business might benefit more from a renting agreement than an outright purchase.

Market viability

Understanding market trends and demand for motorcycle services is essential. Financial agencies may require businesses to present viable business plans highlighting how they will use the motorcycles to generate revenue, which can improve the chances of securing financing. A comprehensive market analysis can demonstrate the potential for growth in urban areas where quick delivery services are in high demand.

Regulatory compliance

Financing agencies may also look at a business's adherence to local regulations concerning commercial motorcycle operations. Compliance with safety, licensing, and insurance requirements can affect financing options. For example, businesses in regions with strict emission regulations may need to invest in eco-friendly motorcycles to obtain financing.

Note

1. Extracted from https://www.uber.com/de/en/deliver/getting-started/tax-information/

Chapter 9: Corporate Responsibilities for the Safety of Commercial Motorcycles

Chapter summary

As businesses increasingly rely on commercial motorcyclists for e-commerce, quick commerce, and ride-hailing, ensuring driver and passenger safety becomes critical. Rapid growth and aggressive delivery timelines have heightened crash risks and highlighted safety gaps due to informal employment practices. Robust hiring protocols, regular fitness assessments, targeted driver training, passenger awareness and clearly defined safety measures in contracts are essential. Additionally, leveraging telematics for driver monitoring, professionalizing the workforce, and providing stable employment conditions can reduce turnover and improve compliance. A comprehensive approach to corporate responsibility is vital to enhance driver and passenger protection, customer satisfaction, and operational sustainability, covering regulatory adherence, driver health, security protocols, and incentivizing a strong safety culture.

Key challenges identified

Challenges include aggressive delivery schedules prompting risky riding, high driver turnover due to informal labor conditions, inconsistent safety adherence, inadequate fitness assessments, and limited integration of safety requirements into employment agreements.

Practical recommendations

- Structured hiring protocols: Implement thorough background checks, skill assessments, and interviews.
- Routine fitness assessments: Conduct regular medical screenings and daily fitness declarations.
- Comprehensive safety training: Offer sessions in continuous defensive riding, emergency response, and safety updates.

- Safety-focused contracts: Clearly incorporate driver and passenger safety, insurance obligations, and maintenance requirements into contracts.
- Performance monitoring: Use telematics technology for real-time monitoring, feedback, and corrective actions.
- Formalize workforce: Provide fair compensation, stable contracts, and incentives to retain drivers and promote compliance.

Benefits to stakeholders

- Government policy makers receive guidance in setting clear regulations, enforcing compliance through targeted interventions, and collaborating with companies to strengthen motorcycle safety legislation.
- Private sector uses practical frameworks and responsibilities proactively for businesses to manage driver and passenger safety, compliance, and overall service quality, enhancing brand reputation and market position.
- Drivers and passengers can ask for safer working conditions, improved driver skills, and higher service reliability, directly benefiting drivers' welfare and passenger safety.

9.1 Introduction

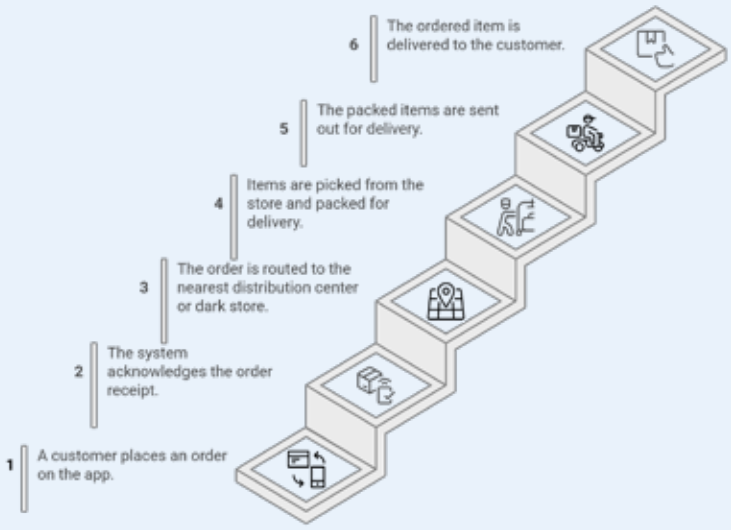
Hiring motorcycle taxi drivers is a critical aspect of e-commerce, quick commerce, or ride-hailing business operations to ensure the safety, reliability, and quality of service for customers. As such, it is vital to adhere to local labor, traffic, safety, and other applicable laws and standards during the hiring process. It is highly recommended to navigate these complexities effectively, consulting with experienced legal, human resources, and business experts.

9.2 Hiring commercial motorcyclists

As businesses in these industries expand (Box 9.1), it is essential to implement robust hiring processes that not only comply with regulatory requirements but also foster a culture of excellence and professionalism among motorcycle taxi drivers. By doing so, business owners can enhance customer satisfaction, build a strong reputation, and achieve sustained growth.

Box 9.1. The rise of quick commerce and its impact in India

Quick commerce (q-commerce) has transformed India's e-commerce with ultrafast 10-to-30-minute deliveries, combining market speed with at-home convenience. Spurred by the COVID-19 pandemic, the sector expanded from groceries to medicines, cosmetics, and electronics. Growth factors include increased smartphone usage, digital literacy, young urban tech-savvy consumers seeking convenience, and significant venture capital investment. The market has grown exponentially and is projected to reach approximately USD 10 billion by 2030 with a 4.5 percent compounded annual growth rate (CAGR).[a] Key players include Amazon Fresh, BigBasket instant, Blinkit, Dunzo, Swiggy, Instamart, and Zepto.



Typical order fulfillment process through quick commerce in India

A key element of q-commerce is last mile delivery, as firms predominantly use two-wheelers for their agility in mixed traffic and dense urban areas. However, aggressive delivery timelines force these drivers to drive dangerously—speeding, wrong side driving— increasing crash risks to themselves and other road users. A recent incident in Bengaluru where an elderly woman was struck by a speeding delivery driver highlights these dangers.[b] Traffic police in Mumbai[c] and Bengaluru[d] have conducted enforcement drives targeting delivery agent violations.

To address these safety concerns, q-commerce companies should implement realistic delivery windows with time buffers for traffic and weather variations, while offering performance incentives that do not compromise safety. Governments should establish and enforce minimum safety standards, potentially developing specific regulations for q-commerce delivery partners.

Notes:

a. Extracted from https://www.chryseum.in/wp-content/uploads/2024/09/Quick-Commerce-Industry.pdf
b. Extracted from https://www.moneycontrol.com/news/trends/serious-safety-issue-elderly-woman-hit-by-speeding-delivery-agent-in-bengaluru-swiggy-responds-12974878.html/amp
c. Extracted from https://timesofindia.indiatimes.com/city/mumbai/if-delivery-boys-flout-traffic-rules-action-on-biz-say-cops/articleshow/116807189.cms
d. Extracted from https://indianexpress.com/article/cities/bangalore/bengaluru-traffic-special-drive-violations-e-comm-delivery-agents-fine-9864633/lite/

A structured process for hiring motorcycle taxi drivers (Box 9.2) can be adapted for delivery and cargo services as well. It highlights the key responsibilities, qualifications, and expectations of these drivers, and the process to hire them. This will help maintain a high standard for motorcycle taxi service, ensuring both driver and passenger safety and satisfaction.

Box 9.2. Sample process for hiring motorcycle taxi drivers

Position Title: Motorcycle Taxi Driver

Key responsibilities

- Transport passengers safely from pick-up to drop-off locations.
- Ensure the motorcycle is well maintained and meets safety standards.
- Follow all traffic laws and regulations.
- Provide excellent customer service, including assistance with directions and handling passenger inquiries.
- Use the company designated app or service tool for receiving ride requests and processing payments.

Qualifications

- Possession of a valid motorcycle driver's license.
- Minimum of (X) years of riding experience (depending on the national requirements).
- Good knowledge of the local environment, routes, and traffic patterns.
- Ability to communicate effectively in (language).
- Clean police criminal and driving record.

Additional requirements

- Motorcycle riding medical clearance.
- Ability to operate a motorcycle for extended periods.
- Capability to assist passengers with luggage if necessary.

Application procedures

- Online application through the company's website.
- Walk-in application.

Initial screening

- Verify qualifications, including driving history and experience.
- Assess the candidate's geographical knowledge and familiarity with routes.

In-person interview and test

- Discuss scenarios related to customer service and handling difficult situations.

- Evaluate communication skills and language proficiency.
- Explain job expectations and clarify any candidate inquiries about the role.
- Conduct a riding test to evaluate driving skills, safety awareness, and handling under different traffic conditions.

Background checks

- Verification of driving record to review the candidate's driving history if available to ensure no serious or frequent infractions.
- Verification of criminal background to ensure the candidate has no pending criminal charges that could impact job performance or safety.
- Reference checks from previous employers or colleagues to assess reliability and work ethic.

9.3 Fitness to work assessments

The guiding principle of health and fitness to work is for employees who use motorcycles for work-related tasks. Such motorcyclists must have regular health check-ups to prioritize safety and health (Box 9.3).

Medical examinations

- Initial assessment: Before employment or hiring, motorcyclists should undergo a comprehensive medical examination to assess their overall health and ability to safely operate a motorcycle. This can include vision tests, hearing assessments, and a review of medical history.
- Regular checks: Motorcyclists should have periodic medical examinations to ensure ongoing fitness for duty. The frequency of these check-ups can depend on age, health status, and specific national legislation.

Fitness standards

- Vision and hearing: Drivers must meet minimum legal standards to ensure they can see and hear adequately while riding, which is crucial for responding to road signals and detecting other vehicles.
- Physical fitness: Motorcyclists should have the necessary physical capabilities to handle a motorcycle safely, including balance, strength, and coordination.
- Cognitive function: The ability to make quick decisions and react to the dynamic conditions of road environments is essential. This includes cognitive assessments for attention and problem-solving skills to handle complex traffic situations.

Health monitoring

- Ongoing health checks: Implement a system for ongoing health checks to monitor any changes in medical conditions that could impact a motorcyclist's ability to operate their vehicle safely.
- Self-reporting mechanism: Encourage motorcyclists to report on personal health changes that may affect their work. This self-reporting could include day-to-day conditions related to fatigue, stress, or any new medical condition.
- Support programs: Companies are advised to provide access to wellness programs and resources that support the physical and mental well-being of motorcyclists. This can help in maintaining their fitness standards.

Companies and organizations, particularly the commercial motorcycle sector, can maintain a high standard of fitness for their motorcyclists by integrating these components, ensuring they are fit to operate vehicles safely and effectively. The company can ensure that by establishing these assessment protocols, motorcyclists for hire always operate at an optimal level of fitness and health, contributing to both their safety and that of their passengers.

Box 9.3. Sample structure for fitness to work assessment

Medical exams

Regular medical exam requirements must be followed if regulated by the local law and requirements. Here are some of the most common requirements for driver medical tests. The frequency can be every two or three years, and for people above 50 years of age annually or based on the medical doctor's instructions.

Pre-employment medical examination

- Conduct medical exams to assess the overall health of potential drivers.
- Test vision and hearing, as these are critical for safely operating a motorcycle.
- Include assessments for cardiovascular fitness, as riding requires physical endurance.
- Evaluate musculoskeletal health to ensure the candidate can handle the physical demands of the job.
- Other specific tests can be required by the local laws and practices.

Drug and alcohol screening

Implement screenings to ensure drivers are substance free, e.g., daily alcohol breath tests and periodic screenings for drugs. Furthermore, the methods used are to be based on national contexts and screenings available.

Physical fitness requirements

- Set standards for physical fitness, including stamina and strength, to handle long periods of riding.
- Monitor body mass index (BMI) test for identifying the health underlying risks.

Cognitive and reaction abilities

Assess the ability to make quick decisions and maintain attention on the road. Ensure drivers are capable of handling stress and unexpected situations effectively as determined by periodic occupational health or psychological tests.

Daily fitness declaration

Regular health declarations usually require drivers to self-declare any health changes, conditions or fatigue that might impact their ability to work safely. It is recommended to have a driver supervisor or dispatcher or other assigned person that will conduct a daily check and quick overview of the driver's readiness for work for that day. They can assess if driver is fit to drive for that day through simple questions and discussion with the driver. Some common questions to assess driver daily fitness are:(i) did you have enough rest? (ii) how many hours of sleep did you have? (iii) do you feel stressed or fatigued? (iv) are you fit to drive? Also, it is strongly recommended to do an alcohol test daily and periodic drug tests on the drivers. It is vital that any unusual driver behavior is recognized timely to prevent incidents/crashes.

Periodic health checks

- Schedule regular health check-ups to monitor ongoing physical and mental fitness.
- Tailor frequency of checks based on age, existing health conditions, or other risk factors.

Random drug and alcohol tests

- Conduct random tests to ensure drivers remain compliant and safe throughout their employment.

Fitness for duty assessments

- If a driver returns after a significant health absence (e.g., a medical condition or a crash), perform a thorough assessment to confirm they are fit to resume duties.

Feedback and reporting system

- Encourage and enable passengers to provide feedback on driving safety and behavior and use it to monitor health-related issues.

9.4 Training programs and safety protocols

The company should provide driver training, define safety protocols, ensure drivers have and use safety equipment, and conduct emergency response training. This ensures a safe and skilled workforce, improving service quality and passenger safety (see also Chapter 6).

9.5 Incorporating safety requirements in contracting and agreements

In motorcycle service contracts, including employment contracts and independent contractor agreements, it is essential to incorporate road safety clauses that address the obligations and responsibilities of the drivers. The motorcycle service company can promote a culture of road safety, protect its interests, and ensure that drivers understand their responsibilities while operating the motorcycle. They can do so by clearly establishing such clauses in both employment contracts and independent contractor agreements (Box 9.4).

Box 9.4. Incorporating safety in contracts and agreements

Safety clauses/requirements in employment contracts:

Road safety compliance

- The driver must agree to comply with all local traffic laws and regulations, always ensuring safe operation of the motorcycle.
- The company links drivers' contracts with lifesaving rules for drivers to comply (see Chapter 3 on Life Saving Rules)

Use of safety gear

- The driver is required to wear appropriate personal protective equipment (PPE) such as helmets, gloves, and jackets while riding the motorcycle.

Vehicle inspection obligations

- The driver must perform routine inspections of the motorcycle to ensure it is in safe operating condition before each shift, including checking brakes, lights, and tires.

Reporting protocol

- The driver must report any crashes, incidents, or safety hazards to the company immediately following the event, outlining the procedures for documentation and follow-up.

Training compliance

- The driver is required to complete all necessary road safety training and skill assessments provided by the company and to adhere to any updates or refresher training as mandated.

Safety clauses/requirements independent contractor agreements

Compliance with safety regulations

- The contractor agrees to obey all applicable road safety laws and ensures their activities do not compromise safety for themselves or passengers.

Insurance requirements

- The contractor must maintain valid insurance for the motorcycle, including liability coverage, and must provide proof of such coverage to the company.

Indemnification clause

- The contractor agrees to indemnify the company against any claims or liabilities arising from traffic violations or safety breaches during the execution of their services.

Use of company standards

- The contractor must adhere to the safety standards and protocols outlined by the company, including those related to life-saving rules, passenger transport and motorcycle maintenance.

Crash reporting

- The contractor agrees to provide immediate notification to the company of any crashes or incidents that occur during their service provision, along with a detailed report as required.

9.6 Compliance with safety procedures and policies in the driver's contract

In service contracts, including both employment contracts and independent contractor agreements, it is recommended to include requirements and clauses related to safety procedures and policies (Box 9.5). The company can create a structured approach to safety, ensuring both compliance and accountability among drivers and contractors while promoting a culture of safety and preparedness.

Box 9.5. Incorporating safety clauses on driver safety

Comprehensive safety guidelines

Adherence to safety standards

- The driver or contractor must agree to follow all safety guidelines established by the company, which may include specific protocols for riding, passenger handling, and vehicle maintenance.

Review of safety policies

- The contract should require drivers to read and acknowledge their understanding of the company's safety manuals or guidelines, emphasizing their obligation to comply with stated policies.

Provision of safety equipment

- The company must provide or specify the required safety equipment, and drivers must agree to use such equipment during all operational activities.

Risk assessment

Regular assessment

- The contract should outline that the company will conduct regular risk assessments to identify potential safety hazards related to the operation of motorcycles and passenger transport.

Driver responsibility for reporting hazards

- Drivers and contractors must agree to report any identified risks or hazards immediately to the company, facilitating timely assessments and remediation.

Continuous improvement clause

- The company commits to continuously reviewing and improving safety procedures based on risk assessments, feedback from drivers, and incidents that occur.

Emergency response plans

Acknowledgment of emergency protocols

- The driver or their employer must acknowledge understanding and willingness to follow the company's established emergency response plans for various scenarios, such as crashes or medical emergencies.

Training in emergency procedures

- The company agrees to complete mandatory training related to emergency procedures and maintain knowledge of these protocols.

Reporting and documentation requirement

- In the event of an emergency, the driver or their employer is obligated to submit a detailed report to the company, outlining the incident, actions taken, and any necessary improvements to emergency procedures.

9.7 Security measures in the drivers' contract

Including security measures and drivers' security protocols into motorcycle service contracts is essential for promoting a safer working environment. This approach helps protect both drivers and passengers while establishing clear responsibilities and expectations for everyone involved (see Box 9.6).

Box 9.6. Incorporating safety clauses about driver safety

Driver security protocols

Background checks

- The company may require that all drivers undergo thorough background checks, including criminal history and driving record assessments, to ensure a safe and secure working environment.

Verification of identity

- Drivers must provide valid identification and documentation to verify their identity and eligibility to operate a motorcycle for the service.

Training in security practices

- The contract should stipulate that drivers are required to complete training on security practices, including how to ensure personal safety, protect passenger information, and manage confrontations.

Incident reporting procedures

- Drivers must agree to report any security incidents or threats immediately to the company, providing detailed information about the situations, which helps in assessing risks and implementing preventive measures.

Security equipment requirements

- The company may specify the use of security features, such as GPS tracking on motorcycles, panic buttons, or communication devices that drivers must carry during service hours.

Passenger security measures

Verification of passenger identity

- Drivers may be required to confirm passenger identities through a reliable identification process, especially for prebooked rides, to prevent unauthorized or unsafe rides.

Safe pickup and drop-off guidelines

- The contract may outline drivers' responsibilities regarding safe pickup and drop-off locations, ensuring they avoid poorly lit or high-risk areas when possible.

Emergency protocols

Response plans for security threats

- The contract should include agreements on emergency response protocols in case of a security threat, such as robbery or violence, including steps to ensure personal safety and notify authorities.

Access to support services

- The company may provide access to support services for drivers facing security concerns, such as counseling or legal assistance.

Commitment to continuous security improvements

Continuous review of security protocols

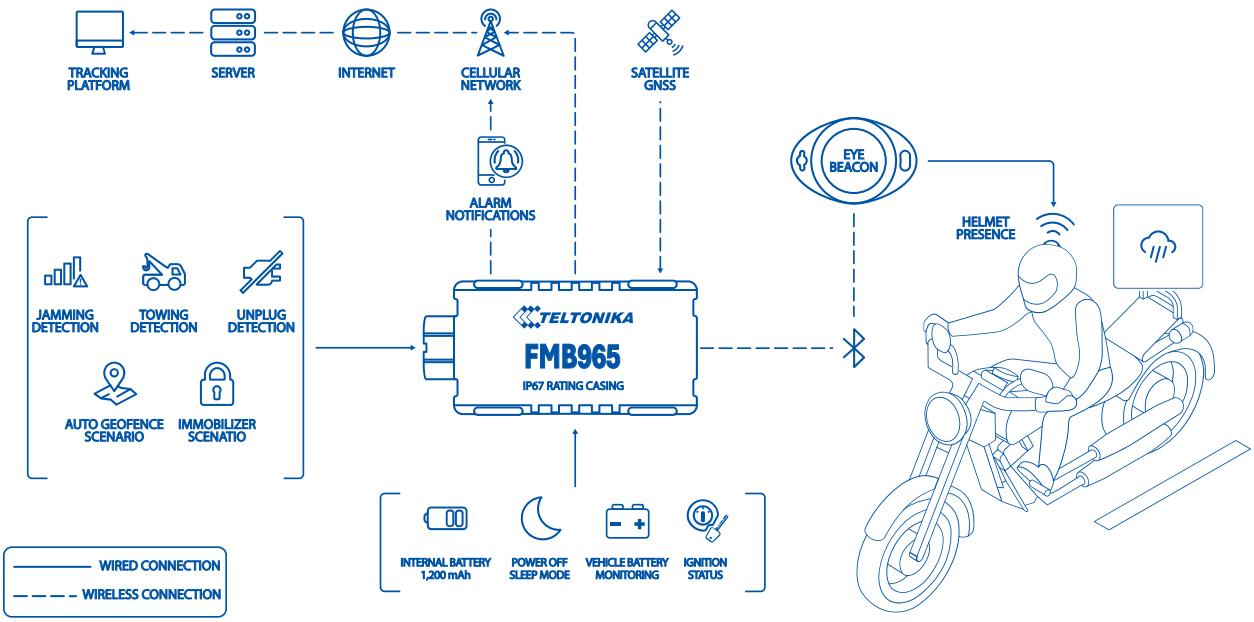
- The company commits to regularly reviewing and updating security measures and protocols based on feedback from drivers and analysis of reported incidents.

9.8 Monitoring of motorcyclist performance

Implementing advanced monitoring tools brings substantial benefits for motorcycle operations. Such tools include telematics, on-board monitoring systems, driver improvement applications, in-vehicle data recorders, fleet management platforms, and driver risk management systems. Chapter 6 briefly discussed about telematics. These electronic devices and software solutions capture data on location, movement, and driver actions notably on speeding, abrupt acceleration, harsh braking, helmet usage compliance (Figure 9.1). Companies gain a deeper understanding of both vehicle usage and driver behavior, enabling targeted coaching, policy refinement, and improved overall safety when they transmit and record these insights for analyses.

The payoff for companies comes in the form of enhanced safety, stronger reputation, and improved sustainability metrics. Drivers benefit from performance feedback that refines their skills, boosts accountability, and may ultimately lead to better insurance rates. These measures help ensure adherence to local road safety regulations, provide structured incident-response protocols, and promote a culture of safety throughout its motorcyclist network (Box 9.7).

Figure 9.1. Schematic of motorcycle tracking and monitoring.



Source: Recreated from https://teltonika-gps.com/use-cases/telematics/motorcycle-tracking-protection-and-safety

Box 9.7. Shared responsibilities to prevent speeding

Recent research underscores that effective speed management requires a three-way partnership between government agencies, companies hiring commercial motorcyclists, and the drivers themselves (Job, 2022; Mwebesa et al., 2021). Governments can enact laws and reinforce them through reliable enforcement, while companies adjust pay structures and monitor drivers, and drivers comply with regulations and best practices (Oliveira et al., 2024; Severini et al., ,2023). Below are guidelines illustrating how each stakeholder can contribute.

Government responsibilities

Set clear speed limits and standards

- Enact legislation specific to commercial motorcyclists' operating contexts (urban vs. rural) to ensure suitable speed limits.
- Improve road infrastructure to moderate speeds naturally—such as roundabouts and speed humps (Seefong et al., 2024).

Consistent enforcement and penalties

- Deploy visible speed cameras in high-risk locations (Job, 2022).
- Enforce tiered penalties—ranging from fines to possible license suspension for repeat offenses (Ayuningtyas et al., 2024).

Policy alignment

- Restrict or prohibit incentives (e.g., "fast delivery or free") that pressure drivers to exceed safe speeds.
- Partner with insurers to reward those who maintain a safe speed record (Nzuchi et al., 2022).

Company responsibilities

Revise pay and bonus structures

- Remove or modify per-delivery time bonuses that may motivate speeding (Mwebesa et al., 2021).
- Introduce financial or benefit-based incentives for safe driving records, such as discounted fuel or maintenance.

Telematics and driver monitoring

- Install GPS tracking or mobile apps to flag speed-limit breaches in real time (Charef et al., 2024).
- Provide targeted coaching for drivers who exceed speed thresholds.

Training and culture

- Incorporate defensive riding and hazard perception modules into all induction and refresher programs (Cost et al., 2019).
- Explicitly include speed compliance clauses in driver contracts, backed by progressive disciplinary measures (Severini et al., 2023).

Driver responsibilities

Adhere to legal speed limits

- Know and observe posted speed limits, avoiding shortcuts or routes that encourage unsafe speeds (Nguyen-Phuoc et al., 2024).

Engage with feedback systems

- Heed real-time alerts or app notifications about speeding; self-correct immediately.
- Report road hazards (potholes, missing signage) that can prompt abrupt or unsafe speed changes.

Uphold a safety culture

- Share best practices with peers and new hires, reinforcing safe speeds as standard procedure.

- Plan routes and factor in rest breaks to avoid hurried driving that leads to speeding (Mwebesa et al., 2021).

Key takeaways

Collaboration and transparency: Governments should invite companies and driver groups to help shape speed regulations; companies can share telematics data to assist in targeted enforcement (Job, 2022).

Positive incentives: Employers' pay systems can reward safe driving instead of speed. Drivers receiving recognition for steady, incident-free service fosters long-term compliance (Nzuchi et al., 2022).

Continuous monitoring: Ongoing audits of crash data and driver feedback can help governments refine speed limits or infrastructure and help companies finetune their monitoring technology (Mwebesa et al., 2021).

By placing speed management on the agenda of government agencies, corporate policies, and individual drivers, this shared responsibility framework can meaningfully reduce crash risks and sustain a safer environment for commercial motorcyclists.

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9.9 Driver performance and merit reviews

This guide discusses the best practice of minimum recommendation for companies to consider and implement. However, it is important to align the company expectations, analytics and driver merit system based on the telematics capabilities.

Performance monitoring requirements

The telematics system must be capable to track a motorcyclist's riding quality automatically from the moment he starts the engine. It must also automatically notify the driver's supervisor and manager of any violations of safe riding rules via the application, or short messaging service or email, or any similar communication. The critical events will be monitored and reported to management for feedback and coaching.

Driver merit reports

It is advisable to create documented performance records for drivers that are regularly reviewed in discussions with supervisors. Feedback sessions with drivers should occur weekly or at least monthly. These reports will serve as a basis for coaching efforts aimed at improving driver safety and performance. It is crucial for the driver's direct supervisor to promptly address, without delays, all critical events related to unsafe behavior and non-compliance. Additionally, managing the installed telematics systems effectively is essential to ensure the accuracy and timely receipt of reports. Best practices indicate that appointing dedicated staff for this role facilitates regular system management and reporting to drivers.

Driver feedback and coaching process

Feedback sessions led by line supervisors should occur promptly after the reports are disseminated. Good drivers usually can receive group coaching, whereas it is important to that coaching is individual for poor performance to address their specific issues. Feedback can be provided to groups during toolbox talks, forums, safety meetings, or other suitable sessions. Drivers showing exemplary performance should be recognized, while those who have improved significantly should be commended. Drivers with poor or declining performance will need one-on-one feedback sessions to cover. The explanation of report findings for underperforming drivers should include certain elements to facilitate improvement. All feedback sessions should be summarized and incorporated into the regular reports:

- An opportunity for the driver to discuss their performance.
- A discussion on strategies for improvement and the support needed.
- Access to training materials to enhance their skills.
- An agreement on actions to improve performance.
- The establishment of measurable targets and timelines for improvement.
- A clear outline of escalation processes for corrective action if progress is insufficient.

Driver reward and consequence management

Recognizing and rewarding excellent driver performance are essential in any improvement program. Corrective measures should also be in place for those who fail to meet safety expectations as indicated by the system. Transparency and consistency in recognition and corrective actions are key to successful implementation.

9.10 Measuring reward and consequence management

A driver's performance should be evaluated using the monthly report. Performance should be consistently monitored, with rewards for exemplary drivers based on these evaluations. Drivers eligible for rewards should be ranked according to their performance reports.

Consequence management

A structured consequence management framework is essential to address repeated violations effectively of traffic safety regulations and the company's lifesaving rules by motorcyclists. Such a framework ensures consistency, fairness, and transparency in managing driver compliance. All consequence management actions must align with applicable legal requirements and contractual obligations.

Employers must clearly define and communicate consequence management procedures to all drivers through their employment or service contracts to promote adherence and accountability. These documents should explicitly outline disciplinary actions and escalation steps associated with noncompliance or rule violations. Organizations must maintain detailed records of all traffic safety incidents, disciplinary measures applied, and any rehabilitative or corrective actions implemented. These records serve as critical documentation, enabling accurate assessment of a driver's overall safety compliance history and professional conduct. Upon request, such records should be accessible to relevant contractors or regulatory authorities to support informed decision making.

Although dismissal from a contract due to serious or repeated violations does not necessarily preclude future employment opportunities with other organizations, motorcyclists with documented histories of significant or persistent noncompliance may receive recommendations for restrictions on future engagements, subject to country-specific guidelines and internal policies. An example of a structured consequence management system adapted from good practices within the oil and gas industry is illustrated in Table 9.1.

Table 9.1. Example of consequence management framework for motorcyclist safety violations.

Offence	First instance	Second instance	Third instance	Forth instance	Fifth instance
Riding under influence alcohol and drugs	Dismissal				
Motorcyclist not wearing helmet	Verbal counseling	Warning letter and financial fine	Dismissal		
Over speeding	Verbal counseling	Warning letter and financial fine	Dismissal		
Using mobile phone while riding	Verbal counseling	Warning letter and financial fine	Dismissal		
Tampering safety devices	Verbal counseling	Warning letter and financial fine	Dismissal		
Leaving the ignition key unattended	Verbal counseling	Written warning letter	Warning letter and financial fine	Warning letter and financial fine	Dismissal
Any other road safety noncompliance	Verbal counseling	Written warning letter	Warning letter and financial fine like national	Warning letter and financial fine like national	Dismissal

9.11 Continuous improvement

Continuous improvement strategies for companies to implement:

- Should identify essential safety processes for motorcyclist safety, such as compliance with life-saving rules, route planning, communication protocols, motorcyclist training, and emergency response, and create appropriate standard operating procedures (SOPs) for each.
- Implement continuous monitoring of SOP implementation, alongside regular reviews and lessons learned from these processes, to make necessary updates.
- Implement feedback mechanisms as an essential component to improve motorcyclists' safety and performance.
- Conduct data analysis with regular data collection and analytics because it enhances the accuracy and efficiency of the monitoring system, driving continuous improvement in motorcyclist safety outcomes.

9.12 Escalation procedures and event handling

Motorcycle incidents can rapidly escalate, posing risks to drivers, passengers, and other road users. Clearly defined escalation and response procedures are essential to effectively manage incidents, minimize further risks, and ensure timely assistance. Table 9.2 summarizes recommended actions and immediate response steps motorcyclists should follow in the event of an incident, promoting safety, clear communication, and proper coordination with emergency services.

Table 9.2. Recommended escalation and event handling procedures for motorcycle incidents.

Action	Details
Pull over	Immediately pull over to a safe location away from the road.
Contact Emergency	Contact the emergency number relevant to the country or area of operation.
Internal emergency number	Companies should establish internal emergency number if no country emergency number is available.
Provide information	Be prepared to provide name, location of incident, nature of incident, contact number, and whether medical or fire response is needed.
Use GPS App	If using GPS tracking app, activate the emergency button and provide above information.
Follow-up call	Gather additional information for the emergency team, including who was involved, number of injured, if anyone is trapped, fire risk.
Hazard warning	Place a hazard warning triangle before the incident site or use other means to alert road users. Avoid using large stones or objects.
Stay off road	Move and stay off the road, when possible, to avoid additional incidents.
Assist at incident	Park motorcycles to maximize visibility, activate lights and hazard lights, provide First Aid if trained, notify company and emergency response.
Remain Onsite	Remain onsite until emergency services arrive, provide a statement to authorities if involved or witnessed the incident.
Follow instructions	Follow any requests or instructions from authorities or operator representative on the scene.

Any company whose motorcyclist is involved in an incident should promptly inform the relevant traffic authorities and police about the incident and provide the relevant details. The company should also cooperate with the relevant authorities and provide any requested information and data that are known about the incident.

9.13 Incident investigation

Good practices show that companies have established internal incident investigation and are learning from the incident process. Similar requirements were identified in the ISO39001 Road Traffic Safety Management System. Hence the organizations should establish, implement, and maintain procedures to record, investigate, and analyze any road traffic crashes and incidents involving their motorcyclists that result in, or have the potential to result in, death or serious injury to road users. Also, where the internal capabilities allow, investigation of all incidents is recommended including motorcycle breakdowns or drivers' mistakes and near-misses.

The objectives of these investigations are to:

- Identify the underlying factors that the organization can control or influence, which may contribute to such incidents.
- Identify the need for corrective actions.
- Identify opportunities for preventive actions.

Investigations should be conducted in a timely manner, with the findings documented and properly maintained. Many incident investigation methodologies are in practice such as incident cause analysis method (ICAM), route cause analysis using 5-ways approach, and Bowtie analysis (see Appendix D). However, the application depends on the company capabilities and the incident severity and complexity. It is essential to communicate the results of the investigation, and the lessons learned throughout the organization and to all drivers to adopt learning and enhance behavior, as well for the company to improve the essential safety processes. Appendix D provides more on risk assessment.

9.14 Formalizing the workforce: Reducing turnover and improving safety

A major challenge in ride-hailing and delivery services is the informal or gig-based nature of the labor market. Many motorcyclists view the job as short term, which can foster high turnover and less regard for safety standards. Companies can adopt a range of strategies—drawing on global research and lessons from multiple contexts—to professionalize their driver base, thereby improving compliance, reducing risk, and strengthening overall service quality.

Commercial motorcycle retention programs

- Structured incentives: Companies can create app-based reward systems to recognize drivers who maintain valid licenses, wear helmets consistently, and follow traffic laws (Maffie, 2023). These systems can allocate better delivery or ride requests, thus incentivizing safe, compliant behavior.
- Community building: Fostering a sense of camaraderie—via driver forums, in-app chats, or periodic meetups—has been shown to reduce stress and turnover, while cultivating a stronger sense of occupational commitment (Wulani et al., 2022).

Better wages and stable contracts

- Fair compensation: Studies show that underpaid or precarious drivers often ignore safety rules to complete more trips (Putra et al., 2025; Ruvishani and Kariyapperuma, 2022). Offering base pay plus stable benefits not only reduces this pressure but also promotes safer performance.
- Formal employment agreements: Moving beyond ad hoc, on-demand hiring to clearer contractual structures—potentially including crash insurance or social security contributions—helps drivers view their role as a career rather than a temporary gig (Lim, 2023). This sense of stability correlates with lower turnover and more consistent adherence to safety regulations.

Professionalizing employment status

- Clarity of worker classification: In many regions, gig workers lack formal recognition as employees. Where feasible, organizations can partner with labor agencies to define working conditions—such as coverage for crashes and health issues—that create a safer and more stable workforce (Tobing, 2024; Christiyono et al., 2024).
- Reducing power imbalances: A mismatch often exists between corporate management and frontline drivers (Amin, 2023). Companies that acknowledge drivers as key stakeholders—offering grievance channels and a transparent pay structure—experience lower turnover and higher compliance (Li et al., 2022).

Encouraging safer and more compliant behavior

- Safety training with incentives: In addition to offering defensive-riding courses, companies might tie completion of training modules to incremental pay raises or route assignments. This approach both upgrades skill levels and underscores the company's commitment to driver well-being (Maffie, 2023; Isbah, 2022).
- Leverage technology for monitoring: Algorithmic management tools can detect red-flag behaviors, like sudden accelerations or repeated traffic infractions (Christiyono et al., 2024). Prompt feedback—paired with performance nudges—encourages drivers to correct unsafe habits proactively.

Policy engagement and advocacy

- Collaborate with regulators: Companies can support local authorities in clarifying gig-worker status and labor standards. This includes bridging social security gaps, providing crash or health insurance, and ensuring fair wages (Ahmad et al., 2024; Samad et al., 2024).
- Stakeholder workshops: Multistakeholder forums can codesign practical frameworks for driver well-being and retention, bringing together drivers, platform representatives, and regulators (Hsieh et al., 2023). Such forums often yield more inclusive, worker-friendly policies.

Benefits of formalizing the workforce

- Lower turnover, higher loyalty: Drivers with stable incomes and clear growth paths show reduced job hopping and greater willingness to follow company rules, including safety mandates.
- Improved safety metrics: Professional, invested drivers are more likely to abide by speed limits, wear helmets, and maintain valid licensing.
- Enhanced public image: Seen as a responsible employer, the company may gain better customer perception and regulatory goodwill.
- Sustainable growth: With consistent performance, companies can expand or scale reliably, knowing driver compliance and service quality remain high.

Companies can address the root causes of both high turnover and low compliance by offering stable contracts, adequate pay, retention incentives, and by treating drivers as valued, long-term professionals. Ultimately, this formalization process not only benefits commercial motorcyclists with fairer working conditions but also strengthens overall safety and service reliability throughout the ride-hailing or delivery sector (Box 9.8).

Box 9.8. Uber Moto's practices in helping to ensure motorcycle safety

Operational Scope and Demographics

Uber Moto operates extensively across Latin America, Africa, and Asia, with Brazil and India representing its largest and most active markets. In regions characterized by heavy reliance on motorcycles for commuting, Uber Moto has become an integral part of daily mobility. Notably, women constitute over 50% of Uber Moto riders in many markets. Initiatives such as "Uber Moto Women" in India have specifically empowered female riders and drivers, addressing unique safety concerns, enhancing their commuting autonomy, and enabling better work–life balance.

Safety management and culture

According to Uber, safety anchors their robust safety management system (SMS) globally, closely aligned with the Safe System Approach. The SMS framework allows Uber to proactively identify risks, implement effective interventions, and nurture a pervasive safety-first culture. Continuous education, advanced technological innovations, and comprehensive compliance monitoring underscore Uber's dedication to fostering safer transportation ecosystems globally.

Platform safety measures

Helmet usage: Uber policies require helmet use for all motorcycle drivers and passengers. Innovative helmet detection technology ensures helps to ensure compliance by requiring drivers to submit helmet verification photos before starting rides. Partnerships with the FIA and the Global Alliance of NGOs for Road Safety further facilitate access to safe, affordable, and high-quality helmets.

Driver fatigue management: Uber has instituted mandatory driving time limits to reduce driver fatigue. While requirements may vary by market, generally, drivers must observe a compulsory six-hour rest after 12 hours of active driving or continuous online presence.

Distraction mitigation: The Uber app minimizes distractions by suppressing notifications while drivers are in motion.

Risky behavior prevention: In many markets, real-time alerts for speed and personalized driver insights dashboards, displaying comparative data on risky driving behaviors, foster safer riding practices.

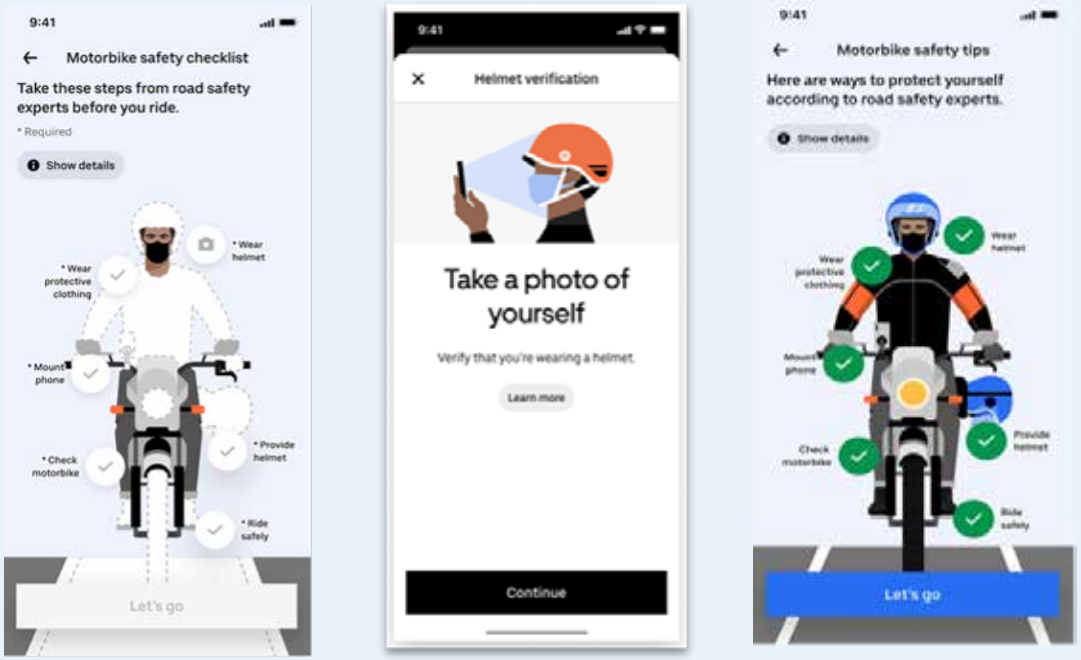
Motorcycle-specific interventions

Uber has developed specialized motorcycle safety interventions. Its Moto safety checklist aims to ensure that drivers conduct essential pre-trip safety inspections, including brakes, tires, helmets, personal protective equipment, and road rule compliance. Uber provides tailored checklist options adaptable to varying local market conditions and requirements, enhancing practicality and relevance. Additionally, where available Uber's in-app motorcycle-specific routing is designed to reduce risks by highlighting hazardous intersections, limiting complex maneuvers, and optimizing routes for safer trips.

Advanced Training, Onboarding, and Monitoring

Uber provides Moto drivers with safety education and interactive hazard-awareness programs, including specialized courses developed in collaboration with Honda. Continuous monitoring while using the app through GPS and accelerometer can identify unsafe driving behaviors and prompt targeted education.

Uber's motorbike safety checklist tips



Incident response, insurance, and safety toolkit

Uber maintains a multi-faceted crash response system featuring a dedicated safety support team available 24/7, and uses RideCheck technology for many markets,, which proactively detects unusual stops indicative of possible incidents. The in-app safety toolkit feature allows drivers and riders to quickly contact emergency assistance and can pre-populate necessary vehicle location information.

Partnerships, advocacy, and infrastructure investments

Uber actively collaborates with globally recognized organizations such as FIA, Global Alliance NGOs, and the International Transport Workers' Federation. Uber supports city initiatives aligned with Vision Zero principles, aiming to eradicate traffic deaths through systemic improvements. Uber received the highest rating from the FIA Road Safety Index for their motorcycle safety efforts.

Addressing challenges and future initiatives

Uber states it continuously evaluates interventions to address ongoing impact, continually revising their interventions based on data and driver and rider feedback. Uber is continually redesigning its app and features to address the needs of powered two-wheelers and develops safety features specific to motorcycle riders, like helmet detection and motorcycle safety checklist.

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Chapter 10: Government Regulations for Commercial Motorcycles

Chapter summary

Government regulations are essential for ensuring the safety, compliance, and sustainability of commercial motorcycle services. Effective oversight involves establishing comprehensive regulatory frameworks covering licensing, operational standards, insurance mandates, safety equipment, and crash reporting. Governments must actively monitor compliance, integrate digital verification methods, and promote ongoing safety education and public awareness campaigns. Clearly defined driver classifications for employees and independent contractors further enhance road safety with adequate worker protections and infrastructure improvements tailored for motorcycles. Collaborative stakeholder engagement, data-driven policy decisions, and consistent enforcement ensure regulations remain relevant and effective, ultimately reducing crash risks and improving public welfare.

Key challenges identified

Challenges include inconsistent enforcement of safety regulations, ambiguous worker classifications, insufficient infrastructure designed for motorcycle safety, limited data integration and monitoring systems, and inadequate public awareness campaigns.

Practical recommendations

- Comprehensive regulatory framework: Establish clear licensing, insurance, safety, and operational standards.
- Robust enforcement: Implement digital verification and real-time monitoring through telematics and application programming interface (APIs).
- Infrastructure enhancements: Develop motorcycle-friendly road designs, dedicated lanes, and protective barriers.
- Stakeholder collaboration: Regularly engage with motorcycle associations, private sector entities, industry, and community groups.

- Targeted public campaigns: Launch sustained education initiatives highlighting safety compliance and protective gear.
- Clear worker classifications: Define employment status clearly, offering appropriate labor protections and benefits.

Benefits to stakeholders

- Government is guided to create effective, enforceable regulations and infrastructure improvements.
- Private sector gets transparency on compliance expectations, promoting responsible business practices and operational stability.
- Drivers and passengers can benefit from safer working conditions, improved driver and passenger protections, and enhanced road safety standards.

10.1. Introduction

Government regulations for motorcyclists and motorcycle services are essential for promoting safety, compliance, and public welfare. Government agencies can effectively regulate and oversee motorcyclists and motorcycle services by embracing responsibilities and best practices, enhancing safety for drivers and supporting responsible business operations.

Governments play a crucial role in ensuring safety and compliance for commercial motorcycle services by establishing policies, guidelines, and monitoring enforcement. They should create a regulatory framework covering licensing, safety, and operational requirements, and formulate policies that address drivers' safety and industry standards. Enforcement of regulations usually is established and monitored through inspections, fines, and license revocations. However, exploring options of digital integration for improved compliance, educational campaigns on motorcycle safety, protective gear, and traffic law adherence could be helpful to raise awareness among drivers and drivers.

Further, the government plays a crucial role in defining the regulatory business classification of ride-hailing drivers. Ride-hailing companies argue that classifying drivers as independent contractors provides them with flexibility and freedom from traditional employment constraints. Conversely, if classified as employees, ride-hailing drivers would be entitled to various benefits and safety that independent contractors typically do not receive, such as minimum wages, paid leave, and company-provided training, equipment, and worker protections.

10.2. Government responsibilities

One of the key government responsibilities is to establish legal framework to develop and implement comprehensive governing motorcycle operation and services that include licensing, safety, and operational requirements. The government can formulate policies that address both driver safety and industry standards, incorporating feedback from stakeholders such as motorcyclists, service providers, safety organizations, and the public. Governments should establish the enforcement of regulations and monitor compliance with laws and regulations through appropriate government agencies, including conducting inspections, issuing fines, and revoking licenses when necessary. Also, governments should promote educational campaigns focusing on motorcycle safety, the importance of protective gear, and adherence to traffic laws to raise awareness among both drivers and drivers.

10.3. Regulatory framework for commercial motorcycles

A well-defined set of regulatory requirements ensures that commercial motorcycle services operate under clear standards, minimizing risks for both drivers and the public. This is vital as judicial systems are increasingly reviewing regulations related to commercial motorcycles and ordering cessation of services such as bike-taxis until relevant frameworks or guidelines are formulated by the state.[1] These foundational elements range from licensing requirements and safety equipment regulations to insurance mandates, operational standards, and crash reporting protocols (Table 10.1). Together, they form the backbone of effective oversight, guiding how governments can safeguard the welfare of all road users.

Table 10.1. Foundational regulatory requirements for commercial motorcycle services.

Requirement	Description
Licensing requirements	Pass laws that require drivers to obtain a motorcycle license or endorsement, ensuring they complete required training and testing to demonstrate adequate riding skills.
Safety equipment regulations	Implement laws mandating the use of safety gear, including helmets, to protect drivers and passengers in the event of a road crash.
Insurance mandates	Require motorcyclists to have liability insurance to mitigate the financial impact of crashes, specifying minimum coverage levels.
Operational standards for services	Establish regulatory requirements for motorcycle services that include vehicle maintenance, regular safety inspections, and compliance with local zoning and operational permits.
Crash investigation and reporting	Mandate the reporting and thorough investigation of motorcycle crashes to identify contributing factors, develop safer regulations, and improve education efforts.
Public awareness campaigns	Run campaigns to educate the public, companies and motorcyclists on safety regulations, encouraging the use of helmets and other protective gear while highlighting safe riding practices.

10.4. Best practices for oversight

Beyond establishing regulations, governments must also ensure they are enforced and continuously improved. Best practices such as regular safety inspections, robust data collection, and collaboration with stakeholders can help authorities keep pace with the evolving nature of motorcycle services (Table 10.2). Transparent communication, ongoing driver training, and inclusive policy making further strengthen these efforts, ultimately enhancing road safety and public confidence.

Table 10.2. Best practices for effective regulatory oversight.

Initiative	Description
Regular safety Inspections	Implement routine safety inspections for motorcycles, particularly for commercial transport services, ensuring vehicles meet safety and emissions standards.
Data collection and analysis	Collect data on motorcycle crashes, incidents, and riding behavior to analyze trends, inform policy decisions, and enhance safety programs.
Collaboration with stakeholders	Engage with motorcycle associations, safety organizations, and industry stakeholders to gather input on best practices and effective regulations.
Continuous training and Education	Support ongoing training programs for drivers to ensure they stay updated on laws and safety practices, fostering a culture of safety and responsibility.
Transparent communication	Maintain open lines of communication with the public regarding safety regulations and updates, allowing citizens to access relevant information easily.

Standards for motorcycles

Governments should establish manufacturing and safety standards and regulate manufacturing and maintenance requirements. Regulations for motorcycle manufacturers should ensure all vehicles meet safety and performance standards, including braking, lighting, and emissions requirements. It is also important to regulate the quality of safety gear and equipment of motorcycles to ensure their daily use is safe.

Inspection and maintenance requirements

Implement inspection programs that require regular checks of motorcycles to ensure they remain in safe operating conditions. This may include checking brakes, tires, lights, and other essential systems. It is essential to inspect the roadworthiness of motorcycles involved in crashes and subsequently repaired. This includes ensuring the safety of any protective gear that continues to be used after the incident.

Monitoring enforcement and ensuring adherence to safety regulations

The government has a significant responsibility in enforcing safety regulations and ensuring that commercial motorcyclists, as well as companies and digital platforms employing or hiring them for commercial roles, comply with established regulations and standards to promote road safety and protect public health. In the prevailing digital era, data integration and services on platforms can be utilized to monitor commercial motorcyclists, in addition to traditional physical observations by government authorities through police enforcement, inspections, and other regulatory measures.

Governments and regulatory bodies need to implement comprehensive enforcement mechanisms to enhance safety and compliance in the e-hailing sector, including tiered penalties and direct regulatory interventions. This ensures that both platforms and drivers comply with established safety standards. The strategy involves several key components:

- Tiered penalty system for platforms*:* This system targets varying levels of infractions. Minor infractions receive warnings and incremental fines, while significant safety lapses incur immediate substantial fines based on the platform's revenue. Repeat offenses or systemic failures may lead to temporary suspension of operating licenses or permanent revocation. Publicizing these violations serves as a deterrent.
- Driver accountability and support: Drivers violating safety regulations face consequences like fines, suspension, or mandatory retraining. Reporting and appeal systems ensure transparency and fairness. Compliance incentives could include recognizing safe drivers and offering training subsidies.
- Enhanced enforcement approaches: Proactive audits, dedicated enforcement units, and mandatory data sharing enhance oversight. Mystery shopper programs assess real-world compliance, while public sensitization campaigns educate passengers and drivers on safety expectations.
- Driver awareness and adherence: Mandatory standardized safety training ensures drivers comprehend regulations. Platforms must communicate these standards clearly, while in-app reminders reinforce safety practices.

Verification processes

Government can develop regulatory protocols with commercial entities to ensure compliance:

- Request companies to maintain digital records of training sessions and compliance checks. These records should be regularly updated and made accessible to regulatory bodies.

- Establish periodic audits directly through the government or government certified or appointed third-party audit agencies to verify that training programs are conducted as required and that drivers are compliant with safety regulations.
- Implement audit logs to keep a detailed history of all compliance and safety inspections. These logs should be tamperproof and securely stored, ensuring transparency and accountability.

Data access mechanisms

Governments could implement regulations requiring companies to enter into data-sharing agreements that stipulate the type of driver data that must be shared, including driver histories, motorcycle maintenance records, and compliance with safety protocols. Additionally, implementing APIs that allow for real-time data access can assist in continuous monitoring, including GPS tracking data, usage records of safety gear, and driver behavior analytics.

Usage of protective gear

Digital verification systems can confirm usage of protective gear, such as helmets. Wearable telematics technology could be employed to monitor and report compliance in real time.

Incentives for safety

Governments, in partnership with the private sector, have a significant opportunity to promote safety within the ride-hailing and delivery service industries by implementing a range of targeted incentives for both drivers and companies. Such incentives can encourage adherence to safety standards and contribute to a culture of compliance, ultimately enhancing road safety for all users.

- Reduced insurance premiums: Discounts for drivers who meet safety standards could benefit from reduced insurance premiums based on their safety records and completion of training programs.
- Financial bonuses for companies: Performance-based rewards for companies that are demonstrating high compliance rates with safety standards could receive financial bonuses or tax incentives to encourage further investments in safety measures.
- Recognition programs: Awards and certifications programs that recognize safe drivers and compliant companies, which can enhance their reputation and attract customers. Award-winning companies could receive promotional support from the government to highlight their commitment to safety.
- Safety technology grants: In collaboration with the private sector to provide grants for companies to invest in safety technology.
- Educational campaigns: Conduct workshops on road safety and best practices, rewarding companies that participate with financial incentives. Incentivize drivers who participate in community safety events to promote public awareness.
- Data sharing: Implement data-sharing agreements to track compliance and performance, rewarding companies that show improvement.

Labeling and compliance

Ensure that all motorcycles sold within the jurisdiction comply with relevant safety standards, requiring proper labeling that indicates vehicle compliance with safety regulations. It is important that the government develops internal institutional and private sector capacities and capabilities to regulate and perform the assurance on standard implementation.

Box 10.1. China's 2020 nationwide helmet promotion campaign - One Helmet, One Belt

China's Ministry of Public Security introduced the "One Helmet, One Belt" initiative[a,b] in April 2020 to lower traffic fatalities by requiring helmet use among electric bike and scooter drivers and seatbelt use among car occupants. Officially launched on June 1, 2020, the campaign addressed the surge in e-bike and scooter injuries. Although the initiative did not penalize helmetless drivers with fines, it led to a rapid increase in helmet demand and sparked considerable public debate.

Key strategies

Public awareness and education

- Large-scale media outreach through social media, posters, and local broadcasts.
- On-site counseling where traffic police and volunteers demonstrated proper helmet use.

Targeted enforcement

- Frequent spot checks at major intersections.
- Warnings or minor penalties for noncompliance, particularly among commercial delivery drivers.

Partnerships and incentives

- Collaboration with delivery services and e-bike rental companies (e.g., introduction of smart helmets that unlock vehicles only when worn).
- Encouragement for retailers to maintain stable helmet pricing despite high demand.

Results

- Higher helmet adoption: Observations at eight urban intersections showed helmet-wearing rates rose from below 10% to over 60%. Delivery drivers' helmet use reached nearly 90%.
- Incorrect use: Although more drivers used helmets, correct strap fastening dropped from about 92% to 84%.
- Group disparities: Traditional cyclists remained largely outside the campaign's scope, with only about 4% wearing helmets.

Challenges and lessons learned

- Limited regulation: Because no strict fines existed for noncompliance, many drivers wore helmets loosely.
- Exclusion of traditional cyclists: Focusing on electric two-wheelers meant traditional cyclists had minimal awareness or enforcement.
- Sustainability issues: Long-term effectiveness depends on continued enforcement and education, particularly regarding correct helmet fastening and coverage of all driver groups.

Notes:

a. Ning, P., Zong, H., Li, L., Cheng, P., Schwebel, D., Yang, Y., Yang, L., Wu, Y., Zhao, M., & Hu, G. (2022). Effectiveness of a helmet promotion campaign, China. Bulletin of the World Health Organization, 100(05), 329–336. https://doi.org/10.2471/BLT.22.287914

b. Image Source: "China Aims to Keep the Road Safe with 'One Helmet, One Belt,'" by Jacky Wong, The Wall Street Journal (updated May 20, 2020). Photograph by Barry Huang/Reuters. Available at: https://www.wsj.com/articles/china-aims-to-keep-the-road-safe-with-one-helmet-one-belt-11589966177.

Box 10.2. Bogotá—Colombia's 2024–2025 speed enforcement and communication initiative

Motorcyclist safety is a critical issue in Bogotá. In 2024 alone, motorcyclists accounted for nearly half (47.3%) of the city's traffic fatalities, reflecting a worrying trend that has positioned Bogotá as Colombia's city with the highest motorcyclist fatalities since 2021. In response, the Bogotá Secretariat of Mobility launched an integrated mass media and enforcement campaign—"We Are Not a Number, Respect the Limit"—to reduce speeding among motorcycle drivers, particularly during high-risk holiday seasons, such as Christmas, New Year, and Easter.

Key strategies

- Public service announcements (PSAs): Trauma surgeon Dr. Juan Manuel Martinez featured demonstrating real hospital scenarios. Emphasized "speeding kills," urging respect for speed limits.
- High visibility enforcement: Data-driven checkpoints with police, radar, and campaign materials at critical high risk locations. Onsite educators highlighted fines and crash risks.
- Targeted media and outreach: Two campaign waves (Dec 2024 and Jan–Feb 2025) deployed USD 350,000 across TV, radio, social media, and out-of-home ads. Geo-crash data guided both enforcement and ad placements in high speed corridors.
- Evidence-based design: Surveys of 700+ local motorcyclists revealed a gap between general awareness of speeding risks and low personal risk perception. Concern about fines (69%) informed messages stressing real financial and life-threatening consequences.

Campaign sample image (left); Motorcyclist checkpoint during speeding enforcement operation (center); Some educators in action (right)

Results

- Immediate fatality reduction: According to Bogotá Secretariat of Mobility data, motorcyclist fatalities dropped by 24.3% (December 2024–February 2025) compared to projections for that period. Overall road user fatalities fell by 12.1% compared to the prior year's reference period.
- High campaign recall and attitude shifts: Twenty-seven percent of surveyed drivers recalled the campaign; of these, 91% recognized the severe consequences of speeding, 72% showed heightened concern, and 86% felt motivated to comply with speed limits. Positive perceptions of traffic police increased among those who remembered the campaign.

Takeaways

- Integrated efforts: PSAs, checkpoints, and data-driven targeting delivered immediate, measurable gains.
- Evidence-based messaging backed by local research changed how drivers viewed speeding and enforcement.
- Sustained campaigns and consistent enforcement are essential for long-term cultural shifts in road safety.

Targeted national campaign

Public education and campaigns as part of an integrated strategy are effective user-based interventions, especially communicating enforcement to increase general deterrence (Box 10.1). These campaigns should be well coordinated by the police, transport department or lead agency, drivers' cooperative society, NGOs or corporates and should be sustained, with a strong result focus. Campaigns work best when alternative behaviors are provided; for example, in a campaign to reduce driving while intoxicated, it would be useful to highlight alternative forms of transport or the importance of selecting a designated sober driver instead of driving under the influence of alcohol (Box 10.2).

Educational interventions may indirectly change road users' perceptions about risks of an activity. For instance, education at a very local level about a new road safety intervention, such as motorcycle lanes when these have not been widely used, may help improve understanding and use for that intervention and its acceptability if a clear benefit is highlighted. Similarly, an intervention that made the target audience more aware of the dangers of speeding may increase awareness of the problem to a level whereby the introduction of a speed camera enforcement program is possible. Broader benefits of public education campaigns to raise awareness of road safety issues may prevail. And thereby increase acceptance of other societal changes to improve safety, such as legislation to support enforcement or improved knowledge on purchase of safe vehicles.

Evidence-based campaigns focusing on helmet use, speed management, and drink driving demonstrate that integrated approaches—combining mass media, community outreach, and visible enforcement—are highly effective. Such campaigns significantly enhance behavioral compliance, reduce crash rates, and save lives. Table 10.3 highlights globally proven strategies, clearly distinguishing standalone educational campaigns from those paired with enforcement efforts., based on the "Guide for Road Safety Interventions: Evidence of What Works and What Does Not Work" (Turner, Job and Mitra, 2021).

Table 10.3. Evidence-based road safety campaigns—helmet use, speeding, and drink driving

Campaign (Context)	Target Behavior	Approach & Key Components	Effectiveness
National helmet law media campaign (LMIC)	Helmet Use	Mass media on universal helmet law, community helmet distribution, and strict enforcement.	High: Helmet usage typically rises significantly, greatly reducing severe head injuries.
Speeding crackdown awareness campaign (Global)	Speeding	Fear-appeal ads combined with visible enhanced speed enforcement (e.g., cameras, patrols).	Moderate–high: Noticeable reduction in speed-related crashes; education alone ineffective.
Anti–drink-driving "buzz" campaign (global)	Drink-driving	High profile media campaign with personal stories and promotion of alternatives, backed by random breath testing enforcement.	High: Significant decline in alcohol-related fatalities due to anticipated enforcement actions.

The two case studies from China and Colombia (Box 10.1 and Box 10.2) provide practical illustrations of successful integrated road safety campaigns. These cases exemplify how well-structured public awareness efforts, when combined with targeted enforcement and community engagement, can significantly influence road user behavior, improve compliance with safety regulations, and reduce traffic-related fatalities and injuries.

Implementation of minimum safety mandates

Compliance with training requirements

Governments can mandate that ride hailing and delivery platforms provide comprehensive training programs for their drivers that cover safe driving practices, essential traffic laws, and proper use of protective gears and safety equipment. Additionally, they can establish mandates requiring all commercial motorcycle drivers to complete government-approved training programs that cover road safety, proper usage of protective gear, drivers' social and welfare requirements related to labor regulations, and customer service. Drivers should be certified upon completing their training and required to undergo periodic recertification to ensure ongoing compliance and knowledge of prevailing safety practices. Furthermore, promoting ongoing education and refresher courses for licensed drivers can keep them updated on new regulations, safety practices, and advancements in motorcycle technology.

Operational hours logged

Regulations can require platforms to implement systems that log hours worked by drivers, ensuring that limits on working hours are adhered to. This aims to prevent driver fatigue and promote safety.

Gear requirements

Governments can impose regulations that require drivers to wear specific safety gear such as helmets for motorcycle drivers and reflective vests and ensure that such gear meets safety standards.

Driver licensing

Licensing programs: Create comprehensive licensing programs that mandate training and testing for motorcycle drivers. These programs should include theoretical knowledge of traffic laws, safe riding techniques, and practical riding assessments.

Operating procedures

Developing clear policies, protocols, and procedures is integral to effective government oversight of motorcycle services. These guidelines address issues ranging from maintenance standards and safety protocols to emergency response and data collection (Table 10.4). By adopting a collaborative and data-driven approach, authorities can continually refine these measures, thereby enhancing both driver and passenger welfare while promoting industry accountability.

Table 10.4. Government operating procedures and oversight guidelines for motorcycle services.

Guidelines	Details
Policies	Policies on maintenance, driver safety protocols, customer service standards
Safety protocols	Passenger onboarding, maximum load limits, safety briefings
Emergency response	Protocols for crashes, driver training for emergencies
Collaboration	Government and motorcycle associations, industry stakeholders, safety advocates
Data collection	Regularly collect and analyze data on crashes and safety compliance
Feedback mechanisms	Systems for feedback from drivers, services, and public

10.5 Commercial registration

Government practices in regulating and overseeing commercial motorcycle services should focus on ensuring compliance with business licensing, permits, and regulations.

Ride-hailing company business registration types

Ride-hailing companies typically operate as limited liability companies (LLCs) or corporations. They require specific commercial registrations such as business licenses, vehicle registration, driver background checks, and minimum insurance coverage to comply with transportation regulations. They focus on providing transportation services and are subject to stringent safety and operational standards. In contrast, digital platforms, which may also be formed as LLCs or corporations, deal with a broader range of services—including delivery and gig economy roles—and primarily need to meet general business licensing, data protection compliance, and intellectual property registration requirements. Consequently, ride-hailing companies face more regulatory oversight related to transportation, while digital platforms concentrate more on user agreements and data handling issues.

Registration

Business registration requirements: Governments should establish clear procedures for the registration of motorcycle service businesses, including application processes, required documentation such as business plans and financial statements, and eligibility criteria. For instance, in India two-wheelers used for food delivery, courier services, and ridesharing or given-for-hire must be registered as commercial vehicles. They come with higher registration fees, the requirement of a permit for ridesharing, an endorsement for carrying goods, and yellow license plates. It is recommended that governments consider parttime hire registration and work permits to promote commercial motorcycle businesses. Governments should ensure that applicants obey local laws and safety regulations as part of the registration process.

Business licensing

- Licensing framework: Develop a licensing framework that sets specific criteria and standards for motorcycle service providers, ensuring that businesses meet operational, safety, and insurance requirements.
- Renewal procedures: Implement procedures for the renewal of business licenses, which could include periodic assessments of compliance with safety standards and operational guidelines.
- Fee structure: Establish a transparent fee structure for business licenses, applications, and renewals, ensuring that costs are reasonable and reflective of administrative efforts.
- Operating permits: Require motorcycle services to obtain permits to operate, which may be specific to types of services offered—passenger transport, delivery services—ensuring that businesses comply with safety and insurance mandates.

Regulation of commercial entities

- Safety and operational regulations: Establish regulations that define safety standards for motorcycle services, including vehicle maintenance, driver training, and the use of safety equipment.
- Insurance requirements: Mandate that motorcycle service providers maintain appropriate levels of liability insurance to protect both their operations and their customers in case of crashes.
- Compliance monitoring: Implement regular inspections and audits of licensed motorcycle service providers to ensure compliance with established regulations, using findings to inform needed enforcement actions or regulatory updates.

Bridging the platform versus company gap

Government plays a significant role in regulating the platform versus company model for ride hailing. This includes the business registration as well as the driver's status of employee versus independent contractor. Around the globe, examples of good practices demonstrate how local and national governments have enacted laws to bridge the gaps between treating gig workers as independent contractors versus employees, thus ensuring minimum safety mandates (Box 10.3)

Box 10.3 Examples of regulations

California AB 5 (2019)[a]

California's AB5 legislation, enacted in 2020, defined how workers are classified to determine if they should be treated as employees rather than independent contractors. This shift grants them access to essential benefits such as minimum wage guarantees, overtime pay, and paid sick leave—ensuring they're fairly compensated for their time and effort, even during waiting periods or slower shifts. Importantly, it provides workers' compensation coverage in the event of crashes or injuries, which are more common in motorcycle-based delivery work. By also securing unemployment insurance and employer contributions to Social Security and Medicare, AB5 helps create a safer, more stable, and dignified work environment for commercial motorcyclists. It should be noted that Proposition 22, passed by voters later that year, allowed exemption for app-based transportation and delivery drivers from the AB5 legislation.

Note:

a. Extracted from https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB5

Pros and cons of classifying ride-hailing drivers as employees versus independent contractors

The classification of ride-hailing drivers as either employees or independent contractors carries significant implications for both drivers and the companies employing them. These implications include differences in job security, benefits, flexibility, oversight, and operational costs. Table 10.5 and Table 10.6 outline the respective advantages and disadvantages from the perspectives of drivers and companies. Additionally, the case study on current regulation of Kenyan gig work (Box 10.4) provides context on existing legal ambiguities, ongoing regulatory debates, and proposed legislative reforms, illustrating practical considerations and potential impacts for stakeholders within Kenya's evolving gig economy.

Table 10.5. Pros and cons of employee versus independent contractor classification – driver perspective.

Employees	
Pros	**Cons**
• Access to benefits: Minimum wage protections; paid sick leave and vacation time; health insurance and retirement benefits. • Job security: More job security compared to independent contractors. • Labor rights: Protected by legal provisions, including rights against wrongful termination. • Training and equipment: Companies provide necessary training and safety gears and equipment.	• Reduced flexibility: Limited flexibility in choosing working hours • Increased company oversight: Subject to more stringent oversight and performance evaluations. Loss of tax. • Deductions: Cannot claim certain tax deductions for work-related expenses.
Independent contractors	
Pros	**Cons**
• Flexibility: Liberty to choose when and how long to work. • Autonomy: It can work for multiple ride-hailing platforms. • Tax deductions: Can deduct business-related expenses, reducing taxable income.	• Lack of benefits: Usually do not receive benefits like health insurance, retirement plans, or paid leave. • No job security: Less job security, contracts can be terminated at any time. • Income variability: Income can fluctuate significantly. • Self-employment Taxes: Must pay their own self-employment taxes.

Table 10.6. Pros and cons of employee versus independent contractor classification – company perspective

Employees	
Pros	**Cons**
• Higher control and oversight: Employers can set strict performance standards, monitor hours, and enforce policy compliance. • Stable workforce: Employee status can lead to a more dedicated workforce, reducing turnover rates. • Enhanced company reputation: Providing benefits and protections can improve public perception and attract customers concerned about social responsibility. • Controlled training and standards: Ensuring a consistent level of service quality through company-provided training is easier.	• Increased costs: Employers must provide benefits such as health insurance, paid leave, and retirement plans, leading to higher operational costs. • Legal obligations: Employers face additional paperwork and legal responsibilities regarding labor laws. • Limited flexibility: Employers have less flexibility in adjusting workforce size and costs during demand fluctuations.
Independent contractors	
Pros	**Cons**
• Lower costs: Employers save on benefits, insurance, and taxes that come with employee classification. • Flexibility in workforce management: It is easier to adjust the number of workers based on demand without the same legal constraints. • Simplicity in compliance: Fewer legal complexities and lower administrative costs related to employment laws. • Scalability: Rapidly scale the workforce up or down based on market conditions without long-term commitments.	• Less control: Reduced oversight on working hours and performance, making it difficult to ensure consistent service quality. • Workforce instability: Higher turnover rates can lead to inconsistencies in service, as contractors may leave at any time. • Potential liability risks: Contractors may not always adhere to safety standards or training, possibly exposing the company to liabilities.

Box 10.4. Prevailing regulations of Kenyan gig work

Kenyan gig work lacks clear regulatory guidelines, particularly concerning the classification of gig workers. Ongoing debates question whether gig workers should be treated as employees with full rights and protections or as independent contractors with fewer rights.

Key doubts

- The ambiguity in Kenyan law over whether gig workers are employees or independent contractors.
- Legal challenges in court, such as the ongoing Meta Platforms, Inc versus Motaung and Others case, which questions the employment status and rights of gig workers.
- The balance between granting gig workers sufficient rights and maintaining their flexibility and autonomy.

Proposed improvements

- Legislative reforms to define the legal status of gig workers clearly, potentially creating a new classification similar to the UK's worker status granting them access to certain protections like minimum wage and social security while maintaining flexibility.
- Sector-specific regulations to clarify relationships between online platforms and gig workers, ensuring transparent payment systems and grievance procedures.
- Updating occupational health and safety laws to protect digital workers.

Expected impact on the Kenyan economy

Introducing these improvements is expected to:

- Enhance the rights and protections for gig workers, ensuring fair treatment and job security.
- Support the growth of Kenya's digital economy by creating a balanced regulatory environment that fosters innovation while safeguarding workers' rights.
- Reduce legal uncertainties and potential litigations for businesses operating in the gig economy.

10.6 Government organizational framework for regulating commercial motorcycle services

The government plays a crucial role in regulating commercial motorcycle services through a structured organizational framework. The government can appoint a lead agency usually and preferably under the road safety responsible authority such as a road safety agency or road safety department under the respective ministry of transport, to serve as the central authority, coordinating efforts across ministries, including Transport, Police, Roads, Commercial, and Labor. The agency will organize intergovernmental meetings to ensure cohesive policy implementation and resolve any jurisdictional conflicts through a clear legislative framework. Table 10.7 outlines some of the common roles and responsibilities from different government ministries. Note that it should be taken respectively and adjusted to specific government organizations.

Table 10.7. Government roles and responsibilities.

Entity	Responsibilities	Coordination efforts	Potential conflicts and resolutions
Lead agency (Road safety)	- Central authority for road safety initiatives. - Coordinates cross-sectoral/ ministerial efforts. - Facilitates stakeholder meetings	- Organizes cross-sectoral /ministerial task force meetings - Ensures cohesive policy implementation through legislative support	- Authority clashes addressed by legislative framework - Can use approach through cross-sectoral Memorandum of Understanding (MoU) - Defines roles clearly and holds decision-making authority
Ministry of Transport	- Formulates driving licensing and operational standards - Formulates motorcycle standards - Oversees road infrastructure improvements	- Collaborate with the Lead Agency for policy and project alignment	- Overlaps with police enforcement - Resolved through joint operations and shared databases
Department of Public Safety (Police)	- Enforces traffic laws and safety regulations - Conducts inspections and audits	- Works closely with Transport and Road Safety Agencies for synchronized enforcement	- Conflicting roles with Transport Department - Resolved by facilitating coordinated enforcement initiatives
Ministry of Commerce and Industry	- Sets manufacturing standards - Collaborates on product standards	- Engages in stakeholder meetings for aligning industry standards with government regulations	- Conflicts with safety standards - Resolved through integration into transport policies
Insurance Regulation Body	- Establishes insurance requirements	- Participates in stakeholder meetings to ensure insurance standards meet safety needs	- Gaps in the existence of legal regulations and compliance - Addressed through real-time monitoring and data-sharing agreements
Ministry of Labor	- Ensure labor laws and worker rights are upheld - Oversees employment standards and worker safety regulations	- Coordinates with other ministries through regular meetings	- Potential regulatory gaps to international norms and standards - overlap with enforcement roles - Resolved by integrating labor-specific issues into the broader regulatory framework
Educational and safety promotion agencies	- Leads public awareness campaigns - Conducts training programs	- Aligns educational efforts with policy initiatives	- Duplication of efforts across platform - Resolved through partnership in outreach initiatives

Stakeholder engagement memorandum

- Frequency of meetings: Regularly scheduled meetings among government agencies, industry representatives, safety organizations, and community members are essential. These meetings provide a platform for exchanging ideas, addressing concerns, and updating stakeholders on regulatory changes and initiatives.
- Involvement of private sector: Direct channels for input from the private sector ensure that their experiences and insights contribute to the regulatory process. It would include motorcycle service providers, manufacturers, and insurance companies. This involvement enhances the policy's relevance and effectiveness.
- Engagement with community organizations: Engaging community groups and safety advocates ensures diverse perspectives in public awareness and safety training. This broad involvement helps build support for safety initiatives. Stakeholder feedback is used to refine regulations and enforcement strategies, allowing for continuous improvement.
- Use of data sharing: Leveraging data-sharing agreements among stakeholders—particularly between government entities and private companies—would improve monitoring and compliance efforts. Real-time data access can enhance decision making and enforcement capabilities.
- Continuous improvement: Establishing systems for continuous feedback and improvement ensures that stakeholders can communicate their perspectives and improve regulatory processes. This includes surveys, interviews, and open forums that allow for a dynamic exchange of ideas.

Government plan to enhance commercial motorcycle safety

Governments should adopt structured planning approaches incorporating clear short-term and long-term objectives that effectively enhance the safety of commercial motorcycles. Such plans must consider existing road safety challenges, resource availability, and stakeholder collaboration to ensure successful implementation. Chapter 11 provides a comprehensive and illustrative template highlighting essential actions, responsible parties, and their anticipated impacts.

10.7 Government role in road infrastructure improvements

Governments play a pivotal role in shaping motorcycle-compatible road systems that reduce crash risks for commercial motorcyclists (OECD–ITF, 2015; WHO, 2022; WRI, 2025). They can substantially improve conditions for drivers and further a comprehensive safe system by implementing targeted infrastructure enhancements, updating safety guidelines, and actively engaging stakeholders. These efforts mitigate common motorcycle hazards—such as inadequate road geometry, poor pavement quality, and unprotected roadsides—thus lowering crash frequency and severity (Milling et al., 2016). Governments can adopt specific measures and guiding principles.

Infrastructure improvements

- Prioritize high risk segments: Identify roads and corridors with frequent motorcycle crashes and direct maintenance funds there first (Milling et al., 2016). Strategies include resurfacing potholes, improving skid resistance, and enhancing drainage.
- Motorcycle-friendly barriers: Consider installing continuous rails or under-rail protection in areas with guardrails, following European examples that protect drivers from exposed posts (Nicol et al., 2012).
- Better intersection and layout design: Intersections and roundabouts often concentrate risk for motorcyclists. Governments can implement turning pockets, clearer lane assignments, and speed-reducing geometry to decrease conflict points (Milling et al., 2016).
- Exclusive or segregated motorcycle lanes, where justified: In corridors where 20 percent or more of traffic are powered two-wheelers, segregated lanes can lower crash rates, as demonstrated in Malaysia's motorcycle lane network. Any physical separation must include smooth surfaces and adequate entry or exit transitions (Box 10.5).

Box 10.5. Benefits and drawbacks of dedicated motorcycle lanes

The specific benefits and drawbacks of dedicated motorcycle lanes[a] are summarized

Benefits	Details
Enhanced safety and reduced crashes	Dedicated lanes can minimize conflicts between motorcycles and other vehicles, thereby reducing the likelihood of crashes and improving overall road safety for motorcyclists and drivers.
Protection from hazards	Motorcycles are less vulnerable to obstacles such as potholes, debris, and roadside hazards when they have a separate lane.
Improved traffic flow with less congestions	Motorcycles can maneuver more easily in dedicated lanes, allowing for smoother traffic flow and potentially reducing congestion on roadways that are typically crowded with cars.
Efficient use of road space	Cities can utilize road space more efficiently, accommodating various modes of transportation by creating specific lanes for motorcycles.
Encouragement of motorcycle use as an alternative transportation	Dedicated lanes can encourage more drivers to choose motorcycles as a viable transportation option, contributing to decreased reliance on cars and easing urban congestion.
Increased awareness of road users about motorcyclists	Designated lanes can enhance the visibility of motorcycles to other drivers, fostering a culture of awareness and caution regarding motorcycle presence on the road.

Drawbacks	Details
Cost of implementation and construction expenses	Creating dedicated motorcycle lanes requires investment in infrastructure, including signage, lane markings, and possibly road modifications, which can strain city budgets.
Space limitations and reduced road space for other vehicles	Allocating space for motorcycle lanes could lead to narrower lanes for cars or the loss of existing lanes, potentially contributing to congestion for other vehicles.
Maintenance needs	Dedicated motorcycle lanes will require regular maintenance to ensure they remain safe and navigable, including clearing debris, maintaining markings, and repairing surfacing issues.
Potential misuse from non-motorcycle traffic	There may be a risk of other vehicles, including cars and bicycles, using the motorcycle lanes improperly, leading to safety concerns and possible traffic violations.
Challenges in enforcement and monitoring compliance	Ensuring that only motorcycles use dedicated lanes can be difficult, requiring law enforcement resources and possibly leading to further complications in traffic management.

Exclusive motorcycle Lanes in Ho Chi Minh City, Viet Nam

Note:

a. World Resources Institute. (2025). Motorcycle safety and urban road infrastructure. Available at: https://www.wri.org/research/motorcycle-safety-and-urban-road-infrastructure

Policy and guidelines

Design standards for motorcyclists: Authorities should embed motorcycle-oriented requirements in national road codes and asset management practices—recognizing these drivers as a distinct user group (Pearson and Whittington, 2001; Milling et al., 2016).

Training for road engineers: Promote existing best-practice manuals such as "Guide to Traffic Engineering Practice Part 15 – Motorcycle Safety" among local planners, ensuring they prioritize motorcycle visibility, safe lane widths, and forgiving roadside design (Pearson and Whittington, 2001).

Speed management and self-explaining roads: Corridor wide speed control measures with roundabouts and well-designed humps reduce crash severity for all vehicles, especially vulnerable motorcyclists. Road designs that emphasize consistent geometry, predictable merges, and clear signage help drivers quickly discern safe speeds and maneuvers (OECD–ITF, 2015).

Collaboration and stakeholder engagement

Partnerships with driver groups: Involving local motorcyclist associations ensures firsthand feedback on high risk road features (Nicol et al., 2012). Such partnerships often yield practical solutions that fit real-world conditions, like advanced stop lines or lane-filtering guidelines.

Community involvement: Engage local businesses, residents, and civil society when planning large projects or new guidelines (Anggraeni, 2022). Early outreach can uncover practical hurdles—such as budget constraints, diverging community opinions, or competing land uses—and foster broader public support for necessary improvements.

Maintenance and ongoing road safety audits

Rapid-response upkeep: Even well-designed roads deteriorate over time. Enforce timely patching of potholes, debris removal, and re-marking of faded lines—especially on routes heavily used by commercial motorcyclists (Milling et al., 2016).

Proactive safety audits: Require road safety audits at design, construction, and post opening phases. Auditors should explicitly review surfaces, sightlines, signage, and guardrails from a motorcyclist's perspective (OECD–ITF, 2015; WHO, 2022).

Comprehensive crash data collection: Geocode motorcycle-involved crash data to identify hot spots, then direct remedial actions where they have the greatest impact, like closing unsafe median openings or adding protective barriers.

Integration into broader mobility plans

Address mixed traffic conflicts**:** In congested urban areas, lane splitting, and filtering can be widespread. Governments may consider legal guidelines for filtering speeds and safe passing distances or promote designated motorcycle lanes. Where lane sharing with buses is allowed, signage and well-marked zones help reduce crashes (WHO, 2022; WRI, 2025).

Strengthen public transport and walkability: In many LMICs, reliance on motorcycles often reflects limited public transit options. Enhancing bus networks, sidewalks, and bicycle facilities can provide safer alternatives and reduce the overall volume of at-risk motorcyclists (Anggraeni, 2022).

Funding and long-term planning: Infrastructure for commercial motorcyclists should be recognized in budget allocations and midterm road upgrade plans. Matching road improvements to actual traffic patterns ensures that resources yield measurable safety results.

Continuous government involvement in road infrastructure improvements is essential for creating safer conditions for commercial motorcyclists. By systematically upgrading high risk roads, enforcing motorcycle-friendly guidelines, and engaging stakeholders, authorities can significantly reduce crash risks and fatalities among drivers—ultimately strengthening road safety for all users (Milling et al., 2016; Nicol et al., 2012; Pearson and Whittington, 2001; Anggraeni, 2022). The infrastructure strategies recommended in international best-practice manuals (OECD–ITF, 2015; WHO, 2022; WRI, 2025) demonstrate that well-designed roads—coupled with effective speed management, data-driven oversight, and public transport improvements—can meaningfully integrate motorcyclists into the broader safe system.

Tying commercial motorcycle safety to citywide transport strategies

Integrating commercial motorcycle safety into citywide transport strategies is essential for creating efficient, safe, and sustainable urban mobility systems. Cities can achieve multiple public benefits by prioritizing the safety of commercial motorcycle operations, including reduced congestion, improved last mile connectivity, and the reinforcement of formal transit systems.

Reducing congestion: Enhancing commercial motorcycle safety encourages the use of two-wheeled vehicles as a viable transportation option that alleviates pressure on roadways typically congested with cars. Motorcycles require less space on the road, allowing for smoother traffic flow and reducing overall congestion levels during peak hours.

Improving last mile connectivity: Cities can promote them as an effective solution for last-mile connectivity by ensuring that commercial motorcycles operate under stringent safety standards. Residents in urban areas will benefit from reliable motorcycle services that seamlessly connect public transit hubs to their final destinations, ultimately enhancing public transport accessibility and convenience.

Commercial motorcycles face significant competition in the last mile connectivity space from various transportation options, including: (i) bicycles and e-bikes, which offer cost-effective and sustainable mobility; (ii) ride-hailing and taxi services, which provide comfort and convenience for passengers; (iii) public transportation, which is affordable and can handle larger volumes of commuters; and (iv) walking, which remains the simplest and most accessible choice for short distances. Additionally, delivery services leveraging vans, bicycles, or other modes compete for consumers needing goods delivered directly to their locations, while micromobility solutions like e-scooters cater to urban residents seeking flexible and convenient travel for short trips.

Commercial motorcycle services must emphasize their unique advantages to maintain their market position—such as speed, efficiency, and agile maneuverability in congested urban environments. Alongside they should potentially explore partnerships or integrations with these alternative transport modes to enhance overall connectivity and user experience.

Reinforcing formal transit systems: Promoting the safety of commercial motorcycles can support formal transit systems by providing integrated transportation options that complement existing public transit networks. When motorcycles are safely incorporated into overall transport planning, they can effectively bridge gaps in service, reducing reliance on informal and potentially unsafe transportation options.

Public benefits

Promoting commercial motorcycle safety yields significant public benefits that can help governments prioritize these measures:

Safer roads: Cities can help reduce the incidence of crashes and injuries by implementing and enforcing safety regulations for commercial motorcycles. This leads to safer riding conditions, not only for motorcycle operators but also for other road users, including pedestrians and cyclists.

Fewer crashes: Enhanced safety measures, such as mandatory training for drivers, vehicle inspections, and the use of protective gear, contribute to a decrease in crash rates. Fewer crashes translate to reduced emergency response costs, healthcare costs for injuries, and societal impacts stemming from traffic crashes.

Improved public health and well-being: Overall road safety improvements contribute to enhanced public health by decreasing the number of collisions and traffic-related fatalities, providing a healthier urban environment for residents.

10.8 Collaboration and standards

Engaging with the motorcycling community and stakeholders to gather input on road infrastructure needs and concerns is essential to ensure that improvements are aligned with driver and passenger safety. It is also important to stay informed about and implement best practices and innovative solutions for road safety from other regions and countries that have successfully improved conditions for motorcyclists. Additionally, companies that offer ridesharing on two-wheelers must be mandated to follow regulations on data sharing, driver background checks, and safety compliance.

10.9 Use of crash and other data for monitoring

Mandate GPS tracking for commercial two-wheelers to monitor deliveries, track locations, and ensure driver and passenger safety, as implemented in some Indian states. Analyze motorcycle crash data to identify improvements needed in infrastructure, motorcycle features, or to design customized motorcyclist safety awareness campaigns. Ensure adequate funding is allocated to road maintenance and infrastructure improvements with a focus on enhancing motorcycle safety. Additionally, provide grant opportunities or incentives to local governments for road improvement projects aimed specifically at enhancing facilities for motorcyclists.

10.10 Consumer protection laws for ride-hailing drivers

Governments propose and implement consumer protection laws that play a crucial role in safeguarding ride-hailing drivers and passengers from fraudulent practices and ensuring that they have access to safe products and essential services. These laws can help protect drivers—passengers for fair price and driver in renting and leasing motorcycle process—from predatory financing. Such laws help ensure that drivers are not subjected to unfair lending practices, high interest rates, or hidden fees associated with loans for purchasing vehicles or safety gear.

Additionally, consumer protection regulations can address the sale of fake or substandard safety equipment, such as helmets or other protective gear, mandating that products meet specific safety standards and are accurately marketed. This ensures that drivers are purchasing legitimate equipment that provides the necessary protection while they are on the road.

Regulatory agency oversight

Consumer protection generally is under the respective Ministry of Trade and related agencies. Matters related to ride hailing and safety equipment typically fall under the jurisdiction of governmental agencies such as:

- In the US, for example, the Federal Trade Commission[2] (FTC) is responsible for enforcing consumer protection laws against deceptive business practices, which include predatory financing and false advertising of products.
- Consumer Product Safety Commission[3] (CPSC): This agency oversees product safety standards, ensuring that items such as helmets meet safety regulations to prevent injuries caused by defective or substandard products.
- State consumer protection offices:[4] Many states have their own consumer protection agencies that address local issues. These agencies may handle complaints related to predatory financing or enforce state-specific regulations regarding product safety and advertising.

Notes

1. Extracted from https://www.businesstoday.in/latest/corporate/story/rapidos-15-lakh-drivers-face-uncertainty-as-karnataka-hc-bans-bike-taxi-470779-2025-04-04
2. Extracted from https://www.ftc.gov/
3. Extracted from https://www.cpsc.gov/
4. Extracted from https://www.usa.gov/state-consumer

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Chapter 11. Commercial Motorcycle Safety Action Plan

Chapter summary

The commercial motorcycle safety action plan is a structured framework designed to substantially reduce motorcycle-related fatalities and injuries through coordinated action between the public and private sectors. It establishes clear goals for improving safety, such as increasing certified helmet availability, promoting helmet usage, and delivering comprehensive driver training. These guidelines apply across all commercial motorcycle activities, including contracted operations, setting stringent standards for driver and passenger safety. A phased implementation plan that incorporates pilot testing, revisions and dissemination, and ongoing monitoring ensures guidelines remain adaptable and effective. The plan fosters an integrated approach to achieving sustained improvements in road safety emphasizing collaborative responsibility among governments, companies, industry, and markets.

Key objectives

- Significant reduction in motorcycle-related fatalities and injuries.
- Increased availability and use of certified helmets.
- Implementation of standardized driver training programs.

Key challenges identified

- Ensuring consistent implementation across different regulatory environments.
- Effective enforcement and compliance monitoring.
- Addressing variations in consumer behavior and market expectations.
- Maintaining continuous review and relevance of safety guidelines.

Practical recommendations

- Pilot programs: Initial testing in selected regions, with systematic data collection and stakeholder feedback.
- Regular reviews: Periodic updates at least every three years, adjusting to legislative and industry changes.
- Collaborative implementation: Clearly defining roles for government, companies, industry, drivers, and customers.
- Structured training and education: Comprehensive driver training programs focused on practical safety skills.
- Robust monitoring: Continuous evaluation using data-driven metrics and performance indicators.

Benefits to stakeholders

- Government receives a clear regulatory framework, actionable metrics, and structured approaches to enforcement and oversight.
- Private sector gets standardized safety guidelines, best practices, and ways of operational efficiency and corporate reputation.
- Drivers and passengers are empowered by improved safety conditions through targeted training, better equipment standards, and heightened safety awareness.

11.1 Purpose and objectives

The purpose of the motorcyclist safety action plan is to significantly reduce motorcycle-related fatalities and injuries, fostering safer roads and healthier communities. It is designed to equip both the private and public sectors with the necessary tools and strategies to enhance motorcyclist safety, including:

- Achieving a targeted percentage reduction in motorcycle fatalities within a specified timeframe.
- Increasing the availability and distribution of certified safety helmets.
- Promoting higher rates of helmet usage among motorcyclists.
- Implementing a comprehensive driver training program for motorcyclists.

11.2 Application, legal and other requirements

The requirements outlined in this document apply equally to both the private and public sectors across the targeted ten countries, regardless of whether activities are commercial or noncommercial. They are relevant to all personnel involved in motorcycle operation, including employees, contractors, and subcontractors.

This framework is applicable throughout all stages of the contract process—from planning and prequalification to final evaluation and contract closure. It provides a structured approach to define the technical scope for contracted operations, serving as either a standalone reference within contract agreements or integrated text within supplier agreements.

It is strongly recommended that all organizations fully adopt the recommendations from this document to govern their motorcycling operations, including interactions with contractors. All staff, contractors, subcontractors, and their drivers and passengers are expected to prioritize compliance with the outlined standards. In instances where local laws and regulations differ from those in this document, the stricter regulations shall prevail.

11.3 Review and improvement

This document shall undergo regular review and updates at least every three years, unless significant changes to national road safety laws or industry best practices necessitate more immediate revisions.

Although the guidelines establish a foundational framework, they are not exhaustive. The implementation process will allow for further development and tailoring to meet specific needs and circumstances, ensuring the document remains relevant and effective.

11.4 Shared responsibilities

These guidelines have been created considering the diverse needs for safe and regulated motorcycling services across various stakeholders. It is essential that all parties, public and private, comprehend their roles and responsibilities in promoting motorcyclist safety. Requirements may overlap, reflecting different perspectives from the following stakeholders, but they unite around the common goal of improving motorcyclist safety.

We can foster a safer motorcycling environment that benefits all communities by collaboratively engaging with these guidelines. The shared responsibility for safety in commercial motorcycle operations entails the following:

- Multifaceted responsibility: Safety is not solely the driver's concern. Safety is a collaborative effort requiring active participation from companies, the market through customers and their expectations, and the government through regulations and enforcement.
- Company's role: Companies play a significant role by ensuring drivers training, providing proper safety equipment, and establishing clear safety policies. Their investment in these areas directly impacts driver and passenger safety and, consequently, their business success and reputation.
- Market influence: Customer expectations and awareness of safety influence market demands. Increased demand for safer practices can drive positive change across the entire system.
- Government oversight: Government regulations, licensing, and enforcement are vital for setting safety standards and holding all parties accountable.

The following are areas for further analysis, especially in implementation in different business environments:

- Specific regulations: What are the specific safety regulations in place for example, helmet requirements, speed limits, or vehicle maintenance? This would enrich the understanding of the government's role.
- Enforcement mechanisms: How effective is the enforcement of these regulations? Understanding enforcement mechanisms, using inspections and penalties for example, can provide a better assessment of the system's robustness.
- Driver training content: What specific skills and knowledge are taught during driver training? Detailed information about the training curriculum would enhance the analysis of the company's contribution to safety.
- Market dynamics: How does consumer behavior impact the demand for safety features? Analyzing customer preferences can better illustrate the market's role.
- Data and metrics: The real-world effectiveness would require data on crashes, injuries, and enforcement actions. Quantifiable data would significantly strengthen any analysis.

A more comprehensive and insightful analysis of the stakeholders' roles and implementation of the guidelines in commercial motorcycle safety can be conducted by providing more details on these points.

11.5 Commercial motorcycle safety action plan

The following action plan offers a phased approach for testing, refining, and rolling out the guidelines presented in this document. Each phase highlights clear responsibilities, resource allocations, and success metrics, ensuring that governments, businesses, and drivers collaborate effectively (Table 11.1). Through structured pilot programs, targeted revisions, and continuous monitoring, stakeholders can drive systematic improvements in motorcycle safety across various operational contexts.

Table 11.1: Phased action plan for commercial motorcycle safety.

Goal	Description	Responsible party	Priority	Impact
Short term (1 or 2 years)				
Establish central leadership and coordination	Appoint a lead agency, typically under the Ministry of Transport, defining roles for regulation and monitoring.	Ministry of Transport	High	Effective central leadership can enhance coordination and streamline regulatory efforts.
Develop comprehensive driver licensing framework	Formulate and implement a licensing framework focused on training, testing, and monitoring for drivers.	Lead agency (Road Safety) and Ministry of Transport	High	Improved licensing can reduce crashes by ensuring driver competence.
Launch public awareness campaigns	Promote safety regulations, protective gear, and best motorcycle practices through public campaigns.	Educational and safety promotion agencies	Medium	Increased public awareness can lead to better compliance with safety regulations.
Create stakeholder engagement protocols and platforms	Conduct regular meetings with industry representatives and community organizations to gather feedback and discuss updates.	Lead agency (Road Safety) and relevant ministries	Medium	Stakeholder engagement ensures that policies are practical and widely accepted.
Enforce helmet laws	Implement stringent helmet laws and ensure compliance through regular checks and penalties.	Department of Public Safety (Police) and lead agency	High	Helmet laws significantly reduce head injuries and fatalities.
Insurance enforcement	Ensure all commercial motorcycle services have valid insurance by conducting regular inspections.	Insurance regulation body and Department of Public Safety (Police)	High	Proper insurance coverage can provide financial protection in the event of crashes.
Long term (3–5+ years)				
Develop comprehensive safety regulations	Create a comprehensive legal framework for safety standards, operational protocols, and non-compliance penalties.	Lead agency (Road Safety) and Ministry of Commerce and Industry	High	Comprehensive regulations can systematically enhance overall road safety.
Integrate data and compliance monitoring systems	Develop a data-sharing framework for real-time monitoring of compliance with safety and insurance standards.	Ministry of Transport and insurance regulation body	High	Real-time monitoring can improve enforcement efficiency and compliance.
Enhance infrastructure investments	Allocate funding for road improvements designed to enhance motorcycle safety and accommodate commercial motorcycle services. Introduce motorcycle safety in infrastructure plans and designs.	Ministry of Transport and Ministry of Finance	Medium	Better infrastructure reduces crash rates and improves traffic flow.

Goal	Description	Responsible party	Priority	Impact
Strengthen enforcement mechanisms	Establish robust inspection protocols and shared databases for collaborative enforcement efforts across jurisdictions.	Department of Public Safety (Police) and lead agency	Medium	Strengthened enforcement can ensure consistent application of safety standards.
Continuous training and recertification programs	Implement ongoing training programs for drivers to stay updated on safety standards and industry practices.	Educational and safety promotion agencies	Medium	Continuous training can maintain high levels of driver competence and safety.
Engage consulting team in the process where applicable and required				
Pilot testing	Pilot test actions and guidelines with select countries, companies and drivers; Data collection; Feedback	Consulting team	High	Pilot testing actions prior full implementation where applicable
Monitoring and evaluation	Establish ongoing monitoring and evaluation system; collect data, analyze, and adjust	Consulting team	High	Reduction in crashes/ incidents; Improvement in driver behavior; Sustained guideline use

11.6 Stakeholders and roles

Government agencies

- Ministry of Transport: Responsible for regulatory oversight, central leadership, and coordination of safety initiatives, as well as developing comprehensive driver licensing frameworks.
- The lead agency: Usually within the Ministry of Transport or the ministry that oversees the lead agency.
- Department of Public Safety or Police: Enforces helmet laws and oversees compliance checks; plays a critical role in ensuring public safety during the implementation of road safety regulations.
- Ministries of Commerce and Industry: Collaborate on the development of comprehensive safety regulations and operational protocols, ensuring that commercial aspects of motorcycle services are integrated with safety measures.
- Ministry of Finance: Provides funding for infrastructure improvements and motorcycle safety initiatives, ensuring that adequate resources are available for development projects. Additionally, it regulates insurance market for supporting safety of commercial motorcycles business.

Ride-hailing firms

- Engage in pilot programs to test guidelines, ensure compliance with safety regulations, and collaborate with government agencies on safety training initiatives. They also participate in data sharing and contribute to ongoing evaluations of safety protocols.

NGOs

- Provide consultancy services to help shape policy and safety guidelines, support public awareness campaigns, and engage in community outreach to build trust. They serve as intermediaries between the public and government agencies to promote transparency and accountability.

Implementation and evaluation teams

- Design, test, and refine safety guidelines based on pilot feedback and data analysis. These teams facilitate workshops to educate stakeholders and lead ongoing monitoring efforts to assess the effectiveness of the implemented safety measures.

Educational and safety promotion agencies

- Responsible for public awareness campaigns, developing training materials, and supporting the continuous training and recertification programs for drivers to ensure up-to-date safety practices.

11.7 Funding sources

Government funding

- National and local government budgets allocated for public safety and transportation.
- Specific grants targeted toward road safety initiatives and infrastructure improvements.

International organizations

- Funding from international financial entities such as the World Bank, and regional development banks, which often provide loans or grants for infrastructure and safety projects.

Private sector contributions

- Ride-hailing companies can allocate a portion of their revenue to safety initiatives and training programs as part of their corporate social responsibility (CSR).
- Partnerships with NGOs and community organizations that specialize in road safety and education.

Insurance companies

- Insurance firms may finance training programs and awareness campaigns as part of their initiatives to reduce crash-related claims and promote safer riding environments.

11.8 Role of the international and national consulting team

The consulting team plays a critical role in facilitating the successful implementation of the action plan for enhancing commercial motorcycle safety. Their responsibilities will encompass a variety of functions aimed at ensuring that project goals are met efficiently and effectively:

- Project management: Oversee the planning, execution, and monitoring of the action plan. Ensure that all activities align with the overall goals and objectives.
- Stakeholder engagement: Facilitate communication and collaboration among stakeholders, including government agencies, ride-hailing firms, industry, NGOs, and community organizations. Organize meetings, workshops, and forums to gather input and feedback.
- Data analysis and reporting: Collect, analyze, and interpret data related to motorcycle safety practices, crash rates, and compliance metrics. Prepare comprehensive reports to track progress and identify areas for improvement.
- Training development and delivery: Design and deliver training programs for drivers, stakeholders, and law enforcement personnel to promote adherence to safety standards and best practices.
- Guideline development: Develop comprehensive safety guidelines and frameworks based on research, pilot testing, and stakeholder feedback. Ensure that guidelines are practical and tailored to the needs of commercial motorcycle operations.

- Monitoring and evaluation: Establish systems for ongoing monitoring and evaluation of safety initiatives, ensuring that objectives are met, and that adjustments can be made as needed.
- Public awareness campaigns: Collaborate with relevant agencies to design and implement public awareness campaigns that promote motorcycle safety, compliance with laws, and the importance of protective gear.

11.9 Deliverables

- Action plan document: A detailed action plan outlining all phases, timelines, stakeholder roles, resources needed, and success metrics.
- Guidelines for safety practices: Comprehensive safety and operational guidelines tailored for commercial motorcycle services, grounded in research and stakeholder input.
- Training materials: Development of training manuals, multimedia resources, and presentation materials for training programs aimed at drivers and stakeholders.
- Periodic progress reports: Regularly scheduled reports documenting progress against set objectives, including data analysis, stakeholder feedback, and recommendations for improvements.
- Evaluation framework: Establishment of a monitoring and evaluation framework that outlines methods for assessing the effectiveness of safety initiatives and compliance levels.
- Public awareness campaign plans: Strategic plans for public awareness campaigns that include promotional materials, messaging frameworks, and outreach strategies.
- Final evaluation report: A culminating report at the end of the action plan period that captures overall achievements, lessons learned, and recommendations for future initiatives in commercial motorcycle safety.

Abbreviations

ABS	Anti-lock braking system
API	application programming interface
BIGRS	Bloomberg Initiative for Global Road Safety
CAGR	compound annual growth rate
CE	Conformité Européenne (European conformity)
CEBRAP	Brazilian Center for Analysis and Planning
DOT	Department of Transportation (United States)
DUI	driving under the influence
ECE	Economic Commission for Europe (United Nations)
EV	electric vehicle
FIA	Fédération Internationale de l'Automobile (FIA Foundation)
FMVSS	federal motor vehicle safety standards (United States)
FTC	Federal Trade Commission (United States)
GPS	global positioning system
GSP	guaranteed salary program
ICAM	incident cause analysis method
ICE	internal combustion engine
IDB	Inter-American Development Bank
ILAC	International Laboratory Accreditation Cooperation
iRAP	International Road Assessment Programme
ILO	International Labour Organization
JIS	Japanese Industrial Standard
LAC	Latin America and Caribbean region
LLC	limited liability company
LMIC	low and middle income countries
LTO	lease-to-own (financing model)
MoU	Memorandum of Understanding
NBFC	non-banking financial company
NGO	non government organizations
NMT	non-motorized transport
OEM	original equipment manufacturer
PPE	personal protective equipment

PPP	public–private partnerships
PTW	powered two-wheelers
SACCO	Savings and Credit Cooperative Organization
SOP	standard operating procedure
SUV	sport utility vehicle
UNECE	United Nations Economic Commission for Europe
VAT	value added tax
WHO	World Health Organization

Appendixes

Appendix A: Global Perspective on Motorcyclist Safety – Conventions and Regulations

This appendix presents an overview of international conventions and regulatory frameworks relevant to motorcycle safety, including:

- The 1968 Vienna Convention on Road Traffic, detailing uniform global traffic rules for motorcyclists (e.g., helmet use, vehicle maintenance, safe riding behaviors).
- The UNECE regulations, specifying international technical standards for motorcycle safety covering helmets (ECE R22), noise emissions (ECE R41), braking systems (ECE R78), rear-view mirrors (ECE R81), headlamps (ECE R113), and other motorcycle components critical to driver and passenger safety.

Appendix B: Literature Review of Motorcyclist Risk Factors

This appendix offers a detailed, evidence-based summary of risk factors affecting motorcycle safety across five key categories:

1. Driver characteristics: Risks associated with age, gender, education, and socioeconomic status.
2. Behavioral factors: Dangerous behaviors like alcohol impairment, helmet non-use, speeding, unlicensed riding, fatigue, and poor visibility.
3. Environmental and road conditions: Hazards from inadequate infrastructure, poor lighting, congestion, and adverse weather.
4. Vehicle-related factors: Risks from poor motorcycle maintenance, older vehicles, and high-powered engines.
5. Socioeconomic and cultural factors: How cultural attitudes reinforce unsafe riding practices.

Appendix C: Safety Guidelines for Motorcycle Drivers

- This appendix provides practical, scenario-based safety guidelines structured into clear dos and don’ts for various stages of a motorcycle journey, including:
- Pre-ride safety checks—authorization, fitness, protective equipment.
- Safe riding practices—traffic compliance, defensive riding, visibility.
- Nighttime riding guidelines—lighting, speed adjustments, reflective gear.
- Post-ride procedures—safe parking, reporting, maintenance.
- Standards for protective clothing and gear—helmets, reflective vests, armor, and apparel standards from international regulatory bodies.

Appendix D: Motorcyclist Eligibility and Risk Assessment

This appendix outlines international standards and country-specific examples regarding motorcyclist licensing and eligibility for commercial motorcycle operation. It covers age restrictions, licensing criteria, and required training across regions, including Europe, Asia, South America, and Africa. Additionally, it introduces structured risk assessment methodologies to evaluate and manage risks in commercial motorcycle operations. It features a conceptual introduction to the Swiss cheese model for comprehensive risk analysis and detailed explanation and example application of the Bowtie risk assessment approach.

Appendix A: A Global Perspective on Motorcyclist Safety – Key Conventions and Regulatory Frameworks

Overview of the international conventions for safety of motorcyclists

The 1968 Vienna Convention on Road Traffic

This convention aims to enhance road safety and facilitate international road traffic by establishing uniform traffic rules among contracting countries. Appendix A offers an overview and guidance of road safety rules applicable for motorcyclists under the convention:

Overview

Helmet use: Motorcyclists and their passengers must wear helmets to reduce the risk of head injuries in the event of a crash.

Vehicle condition: Motorcycles must be maintained in a roadworthy condition, with functioning lights, brakes, and mirrors to ensure safety and visibility.

Licensing: Motorcyclists must hold a valid driver's license appropriate for the size and type of motorcycle they are operating.

Traffic signals and signs: Drivers are required to adhere to all traffic signals and signs, which are standardized under the convention for consistency across borders.

Alcohol and substance use: Motorcyclists must not operate their vehicles under the influence of alcohol or drugs, as this severely impacts their ability to ride safely.

Detailed guidance

Lane discipline: Motorcyclists should use marked lanes appropriately, keeping to the designated lanes for motorcycles when available, and not weaving between vehicles.

Visibility: Wear brightly colored or reflective clothing and ensure the motorcycle's lights are on to increase visibility to other road users.

Speed limits: Adhere to posted speed limits and adjust speed according to road conditions, weather, and traffic.

Safe distance: Maintain a safe distance from the vehicle in front to allow sufficient reaction time in case of sudden stops.

Passing and overtaking: Always check mirrors and blind spots before passing another vehicle, signal intentions clearly, and only overtake where it is permissible and safe to do so.

Managing intersections: Approach intersections cautiously, adhere to right-of-way rules, and ensure you have clear visibility before proceeding.

Use of hand signals: In addition to electronic signals, hand signals can be used to indicate intentions to other road users in situations where electronic signals might not be visible or functional.

Defensive riding: Always be aware of the surrounding traffic and anticipate the actions of other road users to avoid potential hazards.

By following these rules and guidelines, motorcyclists can ensure a safer participation in road traffic. Each country may have additional rules and regulations, so it is important to be informed about local laws when riding in different jurisdictions.

Overview of the international safety standards

The United Nations Economic Commission for Europe (UNECE)

UNECE Regulations[a] has several regulations under its World Forum for Harmonization of Vehicle Regulations that apply to motorcycles. These include standards for lighting, braking, emissions, and noise control. UNECE regulations specifically targeting motorcycle standards address various aspects of safety, emissions, and performance.

ECE R22[b] - Protective helmets

Uniform provisions concern the approval of protective helmets and of their visors for drivers and passengers of motorcycles and mopeds. It specifies requirements for the manufacturing, testing, and labeling of helmets for motorcyclists. Helmets must undergo impact attenuation tests, penetration resistance, and retention system tests to ensure driver safety.

ECE R41[c] - Noise emissions

Uniform provisions concern the approval of motorcycles with regard to noise. It sets limits on permissible noise levels emitted by motorcycles. This includes standards for testing procedures and conditions to ensure noise pollution is minimized while considering different types of motorcycles and their operational environments.

ECE R78[d] - Braking

Uniform provisions concern the approval of vehicles of categories[e] L1, L2, L3, L4 and L5 for braking. It establishes performance specifications for brake systems on motorcycles. It includes requirements for brake effectiveness, anti-lock braking systems (ABS), and stop lamp activation.

ECE R81[f]- Rearview mirrors

It prescribes the specifications for rearview mirrors, ensuring adequate visibility to enhance safety. This regulation defines mirror size, field of view, and placement on the motorcycle.

ECE R47[g] - Measuring fuel consumption

It outlines the method for determining fuel consumption for motorcycles, promoting efficiency and providing consumers with standard performance data.

ECE R10[h] - Electromagnetic compatibility

Uniform provisions concern the approval of vehicles with electromagnetic compatibility. It ensures that motorcycles are designed to operate without interfering with electronic devices and that they comply with electromagnetic compatibility standards.

ECE R113[i] - Headlamps emitting a symmetrical beam

Uniform provisions concern the approval of motor vehicle headlamps emitting a symmetrical passing beam or a driving beam or both and equipped with filament, gas-discharge light sources or LED modules. This regulation covers the installation and performance of headlamps on motorcycles, ensuring they provide adequate illumination and comply with specified beam patterns.

Notes:

a. Extracted from https://unece.org/search_content_unece?keyword=transport%20standards%20wp29
b. Extracted from https://unece.org/sites/default/files/2021-08/R022r5e.pdf
c. Extracted from https://unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/R041r2e.pdf
d. Extracted from https://unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2018/R078r2e.pdf
e. Extracted from https://unece.org/sites/default/files/2023-12/ECE_TRANS_WP.29_78_Rev.7e.pdf
f. Extracted from https://unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2009/r081e.pdf
g. Extracted from https://www.transportpolicy.net/wp-content/uploads/2021/07/ECE-R47.pdf
h. Extracted from https://unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/2015/R010r5e.pdf
i. Extracted from https://unece.org/fileadmin/DAM/trans/main/wp29/wp29regs/R113rev2_e.pdf

Appendix B: Research Narratives of Risk Factors

Literature review of risk factors for motorcyclists

Category	Risk Factor	Detailed Description	Citations
Driver characteristics	**Young age**	Young drivers exhibit higher risk-taking behaviors, such as speeding, reckless overtaking, and distractions, due to limited experience and greater impulsivity.	Kiwango et al., (2024); Wisutwattanasak et al., (2024); Champahom et al., (2023)
	Older age	Older drivers face increased severity of injury or fatality due to slower reaction times, reduced physical resilience, and diminished cognitive abilities.	Lip et al., (2019); Pervez et al., (2021); Champahom et al., (2023)
	Male gender	Male drivers are more frequently involved in crashes, attributable to riskier behaviors such as speeding, alcohol consumption, and lower compliance with helmet laws compared to female drivers.	Santos et al., (2023); Champahom et al., (2023)
	Low education levels	Lower education levels correlate with higher crash risk, limited safety knowledge, and reduced access to proper training or safety equipment.	Kiwango et al., (2024); Lima et al., (2021)
	Low socioeconomic status	Drivers from lower socioeconomic backgrounds typically lack access to formal training, quality protective gear, and well-maintained vehicles, increasing vulnerability.	Kiwango et al., (2024); Lima et al., (2021); Vuong et al., (2023)
Behavioral factors	**Alcohol and drug impairment**	Substance impairment significantly reduces driver reaction times, impairs judgment, increases risky behaviors, and correlates with riding without helmets and licenses.	Valen et al., (2019); Panumasvivat et al., (2024); Lima et al., (2021);
	Helmet non-use	Non-use of helmets dramatically increases the risk of severe head injuries and fatalities, despite global recognition of helmets as a key protective measure.	Valen et al., (2019); Panumasvivat et al., (2024); Lima et al., (2021); Jung et al., (2013)
	Speeding	Excessive speed reduces driver control, reaction time, and increases collision severity, significantly raising injury and fatality risks.	Li et al., (2022); Ding et al., (2019); Wisutwattanasak et al., (2024); Cheng et al., (2014)
	Unlicensed and inexperienced riding	Riding without a valid license or adequate training is associated with poor knowledge of traffic rules, leading to unsafe riding practices and higher crash involvement.	Asgharpour et al., (2021); Nadimi et al., (2021); Wali et al., (2018)
	Fatigue and commercial riding	Driver fatigue, particularly among commercial motorcyclists who operate for long hours, impairs cognitive and motor functions, increasing crash severity risks.	Kiwango et al., (2024)
	Lack of driver conspicuity	Reduced visibility due to dark clothing, absence of reflective gear, or inadequate use of daytime running lights significantly raises the risk of collision.	Yousif et al., (2020); Wali et al., (2018)

Literature review of risk factors for motorcyclists

Category	Risk Factor	Detailed Description	Citations
Environmental and road conditions	Poor road infrastructure	Poor road surfaces (potholes, rutting, corrugation), inadequate lighting, unclear or missing road markings, and sharp curves substantially elevate crash risks, particularly under adverse weather or nighttime conditions.	Manan et al., (2017); Kashani et al., (2021); Tamakloe et al., (2022); Allen et al., (2017)
	Nighttime and poor visibility	Riding at night or under low-visibility conditions increases severity due to delayed hazard detection and impaired visual perception, especially on poorly lit roads.	Li et al., (2022); Champahom et al., (2023); Pervez et al., (2021)
	Traffic density and urban congestion	Increased crash likelihood and severity in densely trafficked urban environments, where interactions with other vehicles require frequent risky maneuvers.	Allen et al., (2017); Tamakloe et al., (2022)
Vehicle-Related Factors	Vehicle age and poor maintenance	Older motorcycles lacking regular maintenance and advanced safety features (e.g., ABS) pose higher crash risks due to mechanical failures and reduced driver control.	Kashani et al., (2021); Santos et al., (2023);
	Engine size and high-powered motorcycles	High-powered motorcycles encourage higher speeds and aggressive riding behaviors, substantially increasing crash severity and likelihood.	Lima et al., (2021); Waseem et al., (2019)
Socioeconomic and Cultural Factors	Cultural attitudes and norms	Cultural acceptance of risky riding behaviors, such as helmet non-use, alcohol-impaired riding, and speeding, reinforces unsafe riding practices, complicating enforcement and education efforts.	Vuong et al., (2023); Nadimi et al., (2021)

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Appendix C: Safety Guidelines for Motorcycle Drivers

Dos and Don'ts for drivers' safety in common daily scenarios

Before starting the service

Dos	Don'ts
Ensure you have the necessary authorization to use the motorcycle.	Don't start riding if you don't have authorization or if you are not fit to ride safely.
Confirm you are physically and mentally fit to ride, having had enough rest and free from illness, alcohol, or any impairing substances.	Don't proceed if passengers are not safely seated and equipped with helmet.
Declare yourself unfit to ride if necessary, prioritizing safety.	Don't proceed if the motorcycle or load is not safe or not in compliance with standards.
Always carry your valid motorcycle license.	
Verify that the motorcycle has a valid registration.	
Perform a thorough motorcycle check using a daily checklist to ensure the motorcycle is safe; report any issues and request a replacement if necessary.	
Confirm that your motorcycle is visible in the application if the same is used.	
Check if your journey is approved and have your journey plan ready.	
Secure any load as per safety standards.	
Wear appropriate PPE, such as standardized and company approved motorcyclist helmet, sturdy footwear and protective gear.	
Provide a helmet to passengers if they are not having own.	
Know emergency contact numbers in case of a crash.	

After starting the engine but before riding

Dos	Don'ts
Ensure you have enough fuel for your journey	Neglect your personal safety checks before setting off
Check that your gear and helmet are properly ware and secure	Ride without updating your dispatcher if you're journey managed
Adjust mirrors for optimal visibility and minimize blind spots	
Perform a brake test to ensure they are functioning correctly	
Notify your supervisor or dispatcher of your departure if required	

While riding

Dos	Don'ts
Comply with traffic laws and drive defensively, anticipating hazards	Don't use your phone while riding; stop in a safe area if you need to use it
Maintain a safe distance from other vehicles, adjusting for conditions	Don't smoke or allow others to smoke while riding
Be attentive to all road users, especially to vulnerable ones	Don't eat or drink while riding

Riding at night

Dos	Don'ts
Avoid dark tinted or scratched visors or glasses	Don't ride with a dark tinted or damaged visor or glasses
Ride at a speed that allows you to stop within the distance you can see ahead	Don't exceed a speed that prevents you from stopping safely within your visible range
Use high beam headlights for increased visibility, except when within 200 meters of another vehicle	Don't forget to switch to low beams when approaching other vehicles
Slow down and adjust your position if an oncoming vehicle is using high beams and hasn't dipped them	Don't neglect your visibility; ensure that other road users can see you clearly
Wear reflective clothing and ensure your motorcycle is equipped with proper lights	Don't ride at the same speed as you would during the day; adjust your speed for nighttime conditions

At the end of the Journey and/or service

Dos	Don'ts
Stop/park the motorcycle safely and off the road.	Don't leave the motorcycle unsecured and don't fail to communicate your arrival.
Turn off the engine and secure the motorcycle when not in use.	
Report your safe arrival to the respective supervisor or dispatcher.	
Inform them of any road hazards or changes that could affect future travels.	
Clean or arrange for the motorcycle to be cleaned.	
Return the keys to the designated person if required by the procedure.	

Protective clothing

Motorcyclists' protective clothing must meet several key standards to ensure driver safety. Firstly, materials should have abrasion resistance to withstand significant wear, simulating contact with the road in the event of a fall. Additionally, clothing should include armor in critical areas such as the shoulders, elbows, back, and knees to absorb impact forces. Protective clothing often incorporates water-resistant and breathable fabrics to keep drivers dry and comfortable during rides. High visibility colors and reflective materials are recommended to enhance the visibility of motorcyclists on the road. These standards aim to provide maximum protection, reducing the risk of injury during crashes. Manufacturers typically undergo rigorous testing to ensure their protective clothing meets these criteria.

Protective equipment standards

International guidelines recommend additional protective gear beyond helmets, such as gloves, jackets with armor, reflective vests, and protective footwear. Although not mandated by law worldwide, these items are strongly recommended for commercial service. Key standards and regulations that relate to motorcycle protective clothing include:

N 13595[a] - European standard for protective clothing for professional motorcycle drivers' jackets, trousers and one piece or divided suits

- Part 18: General requirements
- Part 29: Test method for determination of impact abrasion resistanceb
- Part 310: Test method for determination of burst strengthc
- Part 411: Test method for determination of impact cut resistance

This standard specifies the performance requirements for protective clothing designed for use by professional drivers. It includes tests for abrasion resistance, impact protection, seam strength, and tensile strength.

EN 1621[e] - European standard for protective armor for motorcyclists:

- Part 1: 2012 - Motorcyclists' limb joint impact protectors
- Part 2: 2014 - Motorcyclists' back protectors
- Part 3: 2018 - Motorcyclists' chest protectors
- Part 4: 2013 - Motorcyclists' inflatable protectors

This standard addresses the requirements for impact protectors used in motorcycle clothing. It includes tests for energy absorption and residual strength for protectors placed in areas such as shoulders, elbows, and knees.

EN 343 - Protective clothing against rain: Although not exclusively for motorcyclists, this standard covers protective clothing that offers waterproof and breathable properties, essential for exposure during rides in adverse weather.

CE - Marking: In Europe, protective clothing for motorcyclists must meet specific CE certification requirements to ensure that it complies with established safety and performance standards. Manufacturers can label their products with a CE mark if they meet relevant regulations such as those mentioned above. ASTM F1952 - American Society for Testing and Materials Standard: This standard outlines requirements for the performance of protective gear for motorcycle drivers in the United States, covering factors such as abrasion resistance and impact protection.

ISO 13993 - International Standard for Protective Clothing: This standard provides guidelines for testing the performance of motorcycle clothing materials against various impacts and abrasion scenarios.

Notes:

a. Extracted from https://standards.iteh.ai/catalog/standards/cen/e2f965f3-42be-4632-aca9-c100cd987b68/en-13595-1-2002?srsltid=AfmBOorxxZ5fHD2ATTQZcfVNZuuzmESzldsixsuBjHzfjWqWq7-Qoaiq

b. Extracted from https://standards.iteh.ai/catalog/standards/cen/dcab906b-a2ed-4d38-8f39-3a1abcce6632/en-13595-2-2002?srsltid=AfmBOorlQBTrmFTzIVI8e-qSWb6w_8PGZTnT5QKQ_QBS9XcH84IMjgdb

c. Extracted from https://standards.iteh.ai/catalog/standards/cen/03068c80-3b60-447a-96c6-31a1869e4b31/en-13595-3-2002?srsltid=AfmBOopzVqNe4LHD34c4WpopS-LSJ6xmRz5pbI5qYV9JFNpQ28XGpPcA

d. Extracted from https://standards.iteh.ai/catalog/standards/cen/ce38a807-eb8f-47cf-a041-a9c5dac4572d/en-13595-4-2002?srsltid=AfmBOorW3wB8ez8nmwcCeYPWEHlfwHCXxFVkVItbIQ62Jh6-b9xUTj_Z

e. Extracted from https://www.satra.com/ppe/EN1621.php#:~:text=The%20EN%201621%2D1%20test,product%20is%20considered%20to%20be

Reflective safety vest or wear

Reflective safety vests for motorcyclists should meet specific standards to ensure visibility and safety on the road. Here are the key standards and features that such vests should include:

Feature	Details
High visibility color	Bright, fluorescent colors such as yellow or orange to enhance visibility during daylight
Reflective material	Retro-reflective strips or panels that provide visibility in low-light conditions and night
International standards	ANSI/ISEA 107 (US), EN 471 or EN ISO 20471 (Europe)
Design	Fit comfortably over existing riding gear without restricting movement, provide full coverage without being excessively baggy
Durability	Resistant to wear and tear, water-resistant or waterproof, if necessary, suitable for various weather conditions
Accessibility	Easy and quick closure mechanisms like zippers

Appendix D: Motorcyclist Eligibility and Risk Assessment

Eligibility for motorcyclists operating for commercial use varies by country and region, but many international regulations share common themes regarding age restrictions, licensing, and background checks.

Examples

The International Driving Permit (IDP) under the Geneva Convention on Road Traffic aids in standardizing licensing requirements. Many countries require a specific motorcycle endorsement or separate licensing category with corresponding training programs to ensure drivers are adequately prepared for operating a motorcycle.

Europe	
United Kingdom[a]	The minimum age for a full motorcycle license (Category A) is 24 years or 21 progressively, but individuals can obtain a provisional license at 17 and ride smaller motorcycles (Category A1) at that age.
Germany[b]	The minimum age for a Class A motorcycle license (for larger bikes) is 24, while a Class A1 (for lighter motorcycles) can be obtained at 16.
Australia	
New South Wales[c]	The minimum age to apply for a learner's permit is 16 years and 9 months, but a full motorcycle license can be obtained at 20, following a graduated licensing system. Driver Testing and training[d]
Victoria[e]	Individuals can apply for a motorcycle learner's permit at 18, with specific licensing requirements thereafter.
Asia	
India[f]	The minimum age for a motorcycle license is 18, but individuals can ride lower powered motorcycles (up to 50cc) at age 16 with a learner's permit.
Japan[g]	The minimum age for a regular motorcycle license is 18, but individuals can ride smaller motorcycles (up to 125cc) at age 16.
Thailand[h]	The minimum age to obtain a motorcycle license is 15 for a motorcycle with an engine under 110cc. For larger motorcycles, the minimum age is 18.
Indonesia[i]	The minimum age to obtain a motorcycle license: SIM C for motorcycles with cylinders up to 250cc is 17 years. SIM C1 is for motorcycles with cylinders over 250cc up to 500cc, or similar motorcycles such as electric motorcycles is 18 years. SIM C2 is intended for motorcycles with cylinders over 500cc or similar motorcycles, including electric motorcycles is 19 years.
Viet Nam[j]	The minimum age for a motorcycle license is 18, with a specific license type for different engine capacities (A1 for motorcycles up to 125cc and A2 for larger engine capacities). People aged 16 years and older are permitted to ride motorcycles with an engine displacement of under 50 cm3.

China[k]	General Requirement: The minimum age to apply for a motorcycle license is generally 18 years. There are different classes of motorcycle licenses based on the type of motorcycle: Class F, E License: For small and medium motorcycles. The minimum age is 18. Class D License: For larger motorcycles the minimum age is 20 years.
Malaysia	The minimum age to apply for a motorcycle license is 16 with a provisional license (class B) for motorcycles below 250cc. Drivers can obtain a full license at 17 after passing the necessary tests.
South America	
Brazil [k]	The minimum age to obtain a motorcycle license (Category A) is 18 years.
Argentina [l]	The minimum age for a motorcycle license (Class A) is 18 years. However, those aged 17 can apply for a provisional license under certain conditions (less than 150 cc), which allows them to ride with restrictions. For Moped 16 years.
Colombia[m]	The minimum age to obtain a moped less than 50 cc and speed less than 45 km/h is 15 years. Motorcycle license is 16 years for smaller motorcycles (up to 125cc). For larger motorcycles, the minimum age is 18 years, and 20 years for full license.
Chile[n]	The minimum age for obtaining a motorcycle license (Class C) is 18 years. Drivers must complete a practical and written exam as part of the process.
Peru[o]	The minimum age to apply for a motorcycle license (Class A) is 18 years up to 400 cc, and 24 years for larger motorcycles. Learners must pass a written exam and undergo practical training.
Paraguay[p]	The minimum age to obtain a motorcycle license is 18 years, and applicants must complete both a theoretical and practical test
Africa	
South Africa[q]	The minimum age to obtain a motorcycle license (Code A1 for light motorcycles) is 17 for test. For larger motorcycles (Code A), the minimum age is 18.
Nigeria[s]	The minimum age to obtain a motorcycle license is generally 18, but actual enforcement can vary.
Kenya[t]	The minimum age for a motorcycle license is 18, and drivers must complete a training course recognized by the National Transport and Safety Authority (NTSA).

License Category	Vehicle in license category	Description of vehicle to operate	Other categories holder can operate	Requirements (Age and Experience)
Category A	Category AM (Moped)	Enables one to ride a motorcycle to and not exceeding 50cc		16 years No passenger
	Category A1 (light motorcycle)	Enables one to ride motorcycle above 50cc	N/A	Minimum age 18 years
	Category A2 (motorcycle taxi, Couriers and three-wheelers)	Enables one to ride a motorcycle above 50cc and carry a passenger	A1 and A2	Minimum age 18 years
	Category A3	Enables one to ride a three wheeled motorcycle and a maximum of 3 passengers	N/A	Minimum age 18 years

Ghana	The minimum age for a motorcycle license is 18 years, and applicants must also pass a driving test.

Notes:

a. Extracted from https://www.gov.uk/ride-motorcycle-moped/bike-categories-ages-and-licence-requirements
b. Extracted from https://www.tuev-nord.de/en/private/traffic/driving-licence-classes/classes-a-a1-m/
c. Extracted from https://www.nsw.gov.au/driving-boating-and-transport/driver-and-driver-licences/driver-licences/getting-your-driver-licence
d. Extracted from https://www.nsw.gov.au/sites/default/files/2021-05/motorcycle-drivers-handbook.pdf
e. Extracted from https://www.ridetek.com.au/obtaining-a-motorcycle-leaners-permit-in-victoria/
f. Extracted from https://www.indiacode.nic.in/show-data?actid=AC_CEN_30_42_00009_198859_1517807326286&orderno=6#:~:text=India%20Code%3A%20Section%20Details&text=(1)%20No%20person%20under%20the,the%20age%20of%20sixteen%20years.
g. Extracted from https://ziplus.jp/do-live/en/column/bike-license-125cc/
h. Extracted from https://tdl-service.com/thai-driving-license-age-requirements/
i. Extracted from https://www.msig.co.id/did-you-know/did-you-know-difference-requirement-and-grouping-type-driving-license-motorcycle
j. Extracted from https://lawnet.vn/ngan-hang-phap-luat/en/tu-van-phap-luat/vi-pham-hanh-chinh/what-age-is-eligible-to-operate-motorcycles-with-an-engine-displacement-of-under-50-cm3-in-vietnam-w-1000574
k. Extracted from https://www.yunnanexploration.com/driving-licence-in-china.html
l. http://www.driving-in.com/brazil/
m. Extracted from https://www.argentina.gob.ar/justicia/derechofacil/leysimple/licencia-de-conducir
n. Extracted from https://www.lasexta.com/motor/noticias/que-permisos-necesitas-conducir-moto-edad-categoria-anos-carnet_20241111567374ce53ebaed0001cb52d8.html
o. Extracted from https://practicatest.cl/blog/licencias-de-conducir/nuevo-examen-practico-motociclistas-chile
p. Extracted from http://www.grtc-gra.gob.pe/documentos/informacion/reglamentos/REGLAMENTO%20NACIONAL%20DE%20LICENCIAS%20DE%20CONDUCIR.pdf
q. Extracted from https://www.asuncion.gov.py/f-a-q/requisitos-para-obtencion-de-licencias-de-conducir
r. Extracted from https://www.gov.za/services/driving-licence/apply-driving-licence
s. Extracted from https://www.adcidl.com/Driving-in-Nigeria.html
t. Extracted from https://ntsa.go.ke/cms/wp-content/uploads/2023/09/NTSA-Charter-2020.pdf

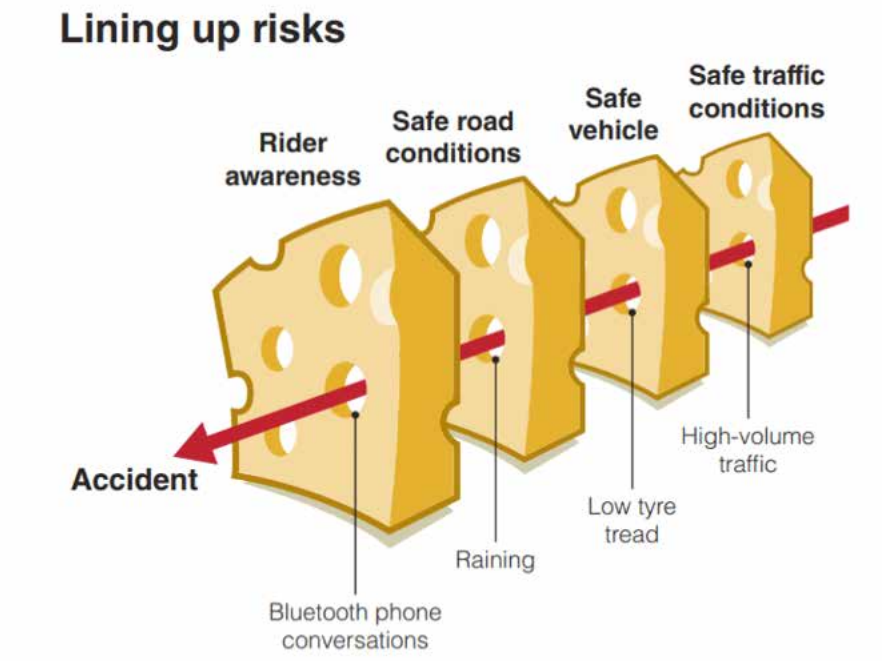
Risk assessment

In motorcycle safety, risk assessment focuses on four key areas: driver behavior, the behavior of other road users, the design and maintenance of roads and infrastructure, and the motorcycle itself. Addressing these areas aims to minimize the risk of system failures, thereby reducing potential consequences for drivers.

For example, to prevent aquaplaning, drivers must be well trained, tires should have adequate tread, speeds should be adjusted according to road conditions, and drainage systems must be effective. If all these factors are managed appropriately, the risk of aquaplaning and its potential consequences are significantly reduced. However, failure to address any one of these elements can greatly increase the likelihood of a severe incident.

The Swiss cheese model illustrates this concept, emphasizing that neglecting any of the Safe System pillars can result in a crash.

Figure A-D.1. Swiss cheese model.



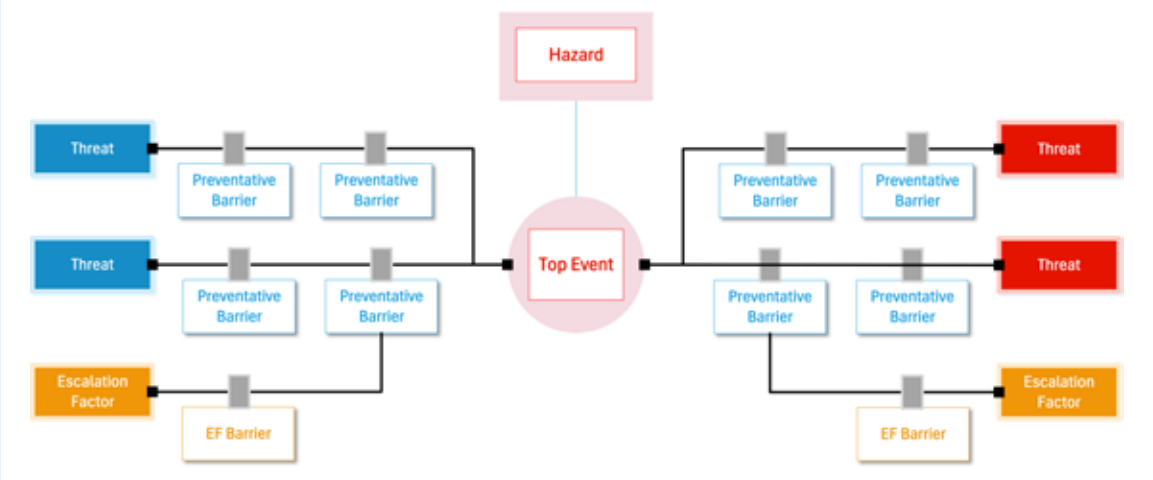
Source: Extracted from https://motorcycleminds.org/virtuallibrary/strategies/motorcyclesafetyframework-1116.pdf

Bowtie risk assessment: Motorcycle delivery service

Box: A-D.1.Bowtie methodology explanation

Bowtie analysis is a risk evaluation method that combines both error tree analysis and event tree analysis to illustrate the pathways of risk development and the measures in place to control or mitigate those risks. It is represented in a diagram that resembles the shape of a bowtie, hence the name.

Events and consequences in bowtie assessment.



- Center node (top event): The central feature is the top event, a point where control is lost, and the hazard can lead to undesirable consequences.
- Left side (threats and fault tree): On the left side of the bowtie is the error tree, which identifies potential causes or threats that could lead to the top event. Barriers or preventive controls are also listed to show how to stop these threats from happening.
- Right side (consequences and event tree): On the right side is the event tree, which outlines potential consequences that might occur following the top event. It also includes recovery measures or mitigative controls in place to minimize or manage these consequences.
- Barriers: Both preventive and mitigative barriers are critical as they show what is being done to prevent the top event or to lessen the impact if it occurs.

The Bowtie analysis provides a visual summary of risk pathways and helps companies identify weaknesses in safety measures, facilitating more effective risk management strategies.

Overall risk assessment: The combined risk score from the top and bottom events indicates a high overall risk level for the motorcycle delivery service.

Mitigation strategies: A comprehensive risk mitigation strategy is essential. This should involve a combination of preventative measures (addressed in the "Control measures" columns), robust insurance policies, and effective emergency response procedures. Regular reviews of this bowtie analysis and its associated risk scores are critical to ensure ongoing effectiveness. The likelihood and severity ratings should be based on historical data and expert decision. This assessment should be tailored to the specific operational area and risk profile of the business.

Table A-D.1. Bowtie risk assessment analysis for delivery company presented in the excel sheet.

Top Event Category	Top Event Description	Contributing Factors	Severity	Likelihood	Risk Score (Severity x Likelihood)	Control Measures	Bottom Event Category	Bottom Event Description	Contributing Factors	Severity	Likelihood (given Central Event)	Risk Score (Severity x Likelihood)	Mitigation Measures
Rider Error	Rider speeding	Lack of training, poor road conditions, distraction (phone	Catastrophic (Death/ Serious Injury)	Likely	High	Comprehensive training, regular refresher courses, speed limiters, telematics monitoring	Injury/Death	Rider serious injury or death	Crash severity, lack of safety gear	Catastrophic	Certain (given Central Event)	Catastrophic	Personal protective equipment (PPE), rider health insurance, emergency response plan
Rider Error	Unsafe overtaking	Traffic congestion, poor visibility, impatient driving	High (Injury)	Likely	High	Training emphasizing safe overtaking techniques, awareness campaigns, Toolbox Talks	Injury/Death	Third-party injury or death	Crash severity, impact location	Catastrophic	Possible	High	Comprehensive insurance coverage, crash investigation procedures
Rider Error	Distraction (mobile phone use)	Texting, calling, using apps while riding	High (Injury)	Very Likely	Very High	Strict policy prohibiting phone use during motorcycle in motion, employee education and training, potential technology to detect phone use (e.g., app monitoring)	Injury/Death	Third-party injury or death	Crash severity, impact location	Catastrophic	Possible	High	Comprehensive insurance coverage, crash investigation procedures
Vehicle Condition	Mechanical failure (brakes, tires)	Inadequate maintenance, poor vehicle condition	High (Injury)	Moderate	Moderate	Regular maintenance schedule, pre-trip inspections, quality control on vehicle procurement	Financial Loss	Damage to motorcycle	Crash severity, repair costs	High	Certain (given Central Event)	High	Comprehensive insurance, preventative maintenance
Environmental Factors	Adverse weather conditions (rain, fog)	Poor visibility, slippery roads	Moderate (Injury)	Moderate	Moderate	Weather-based operational adjustments, appropriate safety gear	Financial Loss	Legal costs	Litigation, compensation claims	High	Possible	Moderate	Legal representation, insurance coverage for liability
Environmental Factors	Poor road conditions (potholes, construction)	Unmaintained roads, lack of infrastructure	Moderate (Injury)	Likely	Moderate	Route planning avoiding known problem areas, real-time updates on road conditions, rider feedback mechanisms	Financial Loss	Legal costs	Litigation, compensation claims	High	Possible	Moderate	Legal representation, insurance coverage for liability

Top Event Category	Top Event Description	Contributing Factors	Severity	Likelihood	Risk Score (Severity x Likelihood)	Control Measures	Bottom Event Category	Bottom Event Description	Contributing Factors	Severity	Likelihood (given Central Event)	Risk Score (Severity x Likelihood)	Mitigation Measures
Third Party Actions	Collision with other vehicles	Driver negligence, inadequate signalling	High (Injury)	Moderate	Moderate	Defensive driving training, rider awareness of blind spots	Reputational Damage	Negative publicity	Social media, news reports	Moderate	Possible	Moderate	Crisis communication plan, proactive stakeholder engagement
Third Party Actions	Vehicle theft	High crime area, lack of secure parking	Moderate (Financial Loss, disruption)	Low	Low	Secure parking facilities, GPS tracking, insurance	Operational Disruption	Service interruption	Repair time, rider unavailability	Moderate	Certain (given Central Event)	Moderate	Contingency plans, backup riders, efficient repair processes

The example scenarios are illustrative and should be adapted to the specific context of your organization and location.

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