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Road Safety in Pakistan: A Critical Analysis of the National Road Safety Strategy

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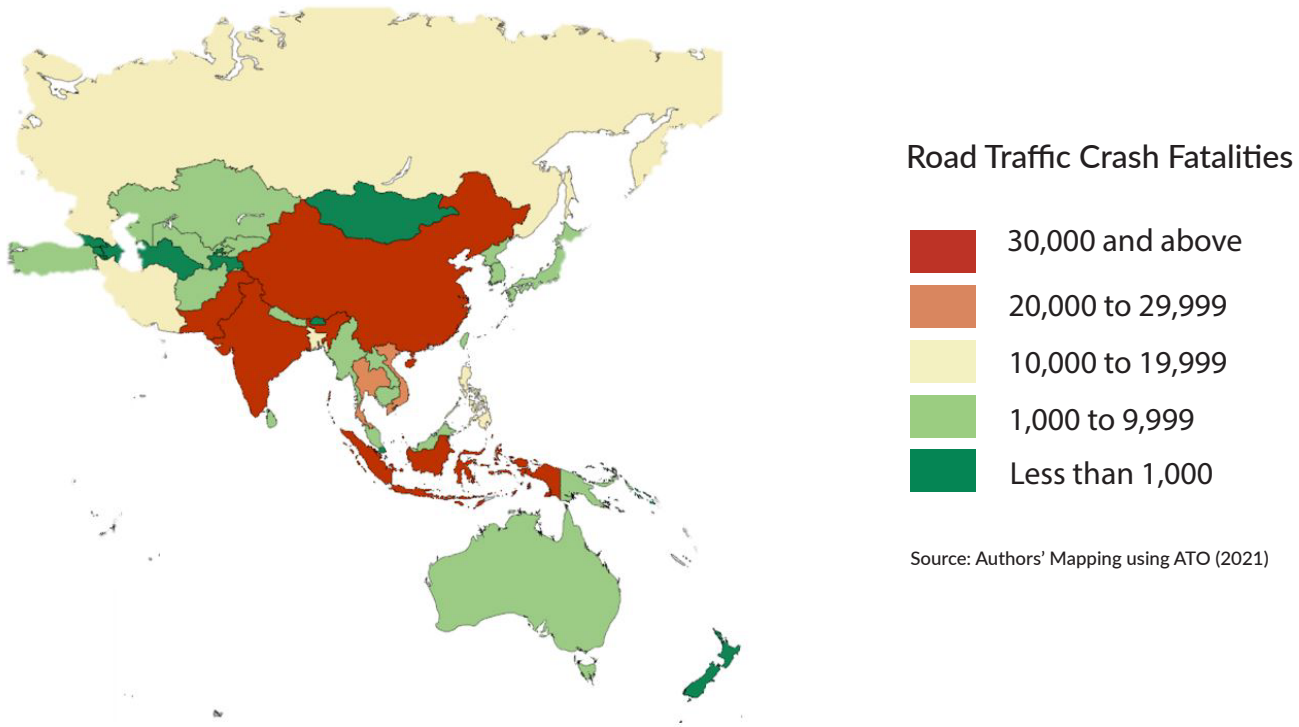
Introduction

The road safety landscape in Pakistan is marked by poor road conditions, laxity in traffic law implementation and widespread culture of risky driving habits. These are aggravated by lack of law enforcement, rampant corruption and scarcity of resources. In addition, the use of outdated vehicles lacking necessary safety features further contributes to higher accident rate. Road-traffic accidents (RTAs) cause approximately 1.35 million deaths across the globe every year. As of the 2021 data published by the Asian Transport Observatory (ATO), Pakistan had more than 30,000 road traffic deaths, of which the vulnerable road users, especially pedestrians, comprise excessively high proportion of the number. The number of pedestrians alone constituted about 41 percent of the total road deaths and portrayed structural weaknesses in the infrastructural design, enforcement and protection of the road users (ATO, 2025).

Figure 1: Road Traffic Crash Fatalities



Source: Authors' Mapping using ATO (2021)

On the same note, according to the World Health Organization (WHO), in Pakistan, the road traffic death rate is still significantly high in comparison with the global standards, which highlights the urgency of the universal intervention. The three primary causes of road traffic accidents as highlighted by the motorway police of Pakistan include:

Figure 2: Primary Causes of Road Accidents in Pakistan

Source: Motorway Police of Pakistan

To address these crises and in keeping with the objective of the United Nations Decade of Action on Roads Safety and Sustainable Development Goals (SDGs) Target 3.6 to reduce road traffic injuries and deaths by half by 2030, the Government of Pakistan published the National Road Safety Strategy (NRSS) 2018-2030 (GoP, 2018). The Strategy uses the Safe System Approach, including five road safety pillars: safe road users, safe vehicles, safe roads and roadsides, safe speeds and post-crash response. All these pillars are geared towards enhancing compliance in behaviour, vehicle quality, infrastructure safety, speed, and emergency medical services at the national level (WHO, 2023).

However, its implementation has been hampered by the systemic issues of lax enforcement, corruption, and underfunding. According to infrastructure ratings made under the International Road Assessment Programme (IRAP), a large percentage of the road network in Pakistan is still graded as low-quality in terms of its safety, especially pedestrians and cyclists. Moreover, institutional initiatives like launch of Pakistan Rad Assessment Programme in 2025 demonstrate new dedication to the policy, but little has been done to improve trends in national causality (IRAP, 2025; ATO, 2025). This knowledge brief analyses the execution of the five pillars of the National Road Safety Strategy 2018-2030 and argues whether Pakistan had improved, stayed stable or declined in all the five pillars of road safety governance.

Safe Road Users

The Safe Road Users pillar of the NRSS is aimed at the minimization of behavioural risk factors such as non-compliance with the traffic laws, helmet wearing, seatbelt use, distracted driving, poor training of drivers, and the inefficient enforcement systems that are all identified as determinants of road traffic injuries and fatalities. Although this pillar is a fundamental part of the Strategy, to date, there has been little progress with only little improvement within certain urban centres, but no such significant change. According to the latest WHO Global Status Report on Road Safey 2023, although helmet and seatbelt use is regulated by the law of Pakistan, the adherence to the laws is insufficient, and behavioural risk factors like distracted driving and speeding still play significant roles in the road trauma, highlighting the existing gaps between the law and practice (WHO, 2023).

Empirical research shows that the lack of safety gears usage is widespread: road surveys indicate that a vast majority of motorcyclists and their passengers wear no helmets, and a large majority of drivers and passengers of vehicles do not wear any seatbelts, which dictates the persistence of the current lack of enforcement and compliance with safety standards among the population (Khoso, 2019; Irfan, 2024). The evidence about the driver's knowledge and attitudes proves that the kno-

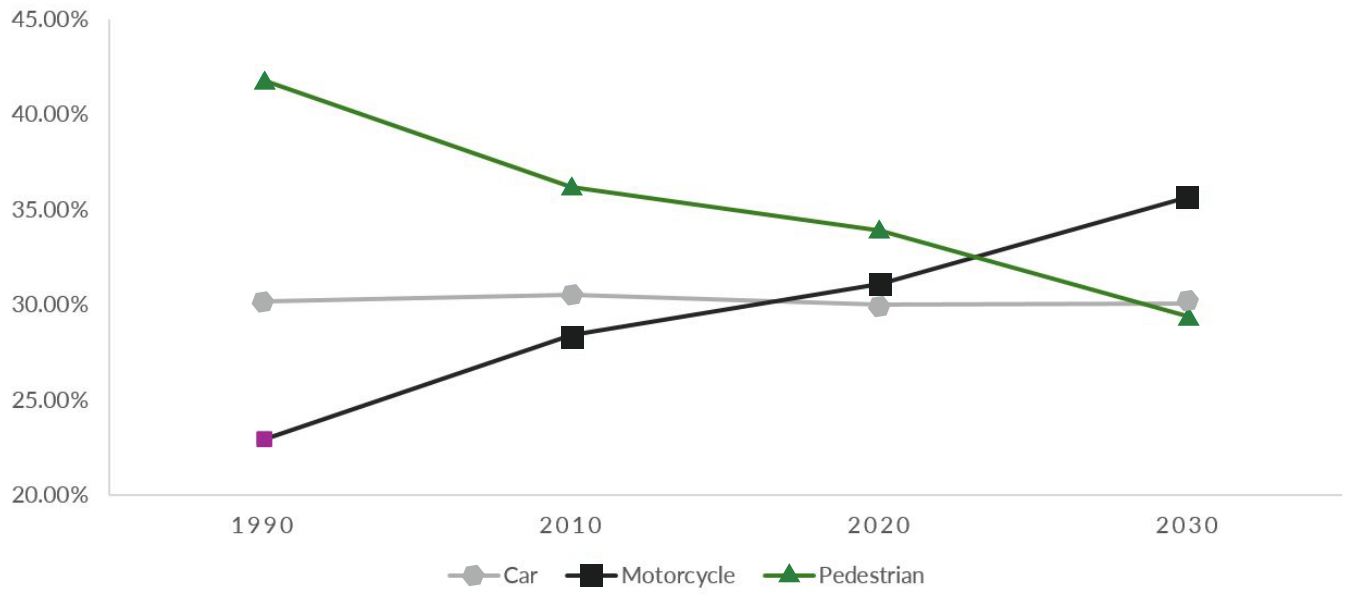
wledge about certain rules (e.g. the use of helmet is obligatory) can be at an average level. However, the knowledge about certain laws, e.g. speeding limit, the harmfulness of using cell phones during driving is low. Further, there is negative attitude towards following the rules, especially among younger and less educated motorists, conflicting with the concept of safe road user behaviour (Memon, et al., 2024).

The impacts of enforcement responses have been localized with the most notable cases of improvement through the implementation of automated e-challan systems and more stringent advisories against helmet and seatbelt violations in big cities. Such measures have increased detection and penalty provision among offenders by a small margin. The costliness and faithfulness of these measures however is not balanced beyond the large urban centres, where enforcement is less potent and social consciousness campaigns are less. As a result, despite an increase in visible enforcement activities and technology-based compliance check-ups, the net effect on national road users' behaviours is rather insert by 2025, and risky behaviour remains prolific and enforcement has not yet reached the necessary strength and coherence to affect mass behavioural charge in line with the aims of the strategy.

Two-Wheelers

Road crashes are the major cause of death among youth all over the world and these crashes have a considerable injury burden among all countries (Khan et al., 2021; Li et al., 2016). Based on the ATO, it is estimated that 1.35 million deaths and 30 to 50 million injuries result from preventable road accidents every year. Pedestrians, cyclists, and motorcyclists constitute up to 50% of road deaths and a significant proportion of injuries. Vulnerable Road users (VRUs) like two-wheeler riders represented 15.5% of traffic fatalities globally in 2023, with injuries exceeding 82,000 in monitored regions (ATO, 2025). Single two-wheeler crashes are common, particularly amongst the young and the elderly. This underscored the need for targeted interventions such as enhanced visibility and stronger enforcement of speed limits. In Low- and Middle-Income Countries (LMICs), where two-wheelers prevail, the impact of crash can be severe, leading to disabilities in the long terms, and thus increasing socioeconomic costs. Helmet usage is very helpful in avoiding serious and commonly incapacitating head injuries (WHO, 2021). As per the Asian Transport Outlook (ATO, 2024), Pakistan's vehicle fleet is dominated by the two-wheelers with around 78% of the total vehicles. It is worrying to see the growing proportion of two-wheelers' users in road traffic crash fatalities:

Figure 3 Road Traffic Crash Fatalities (1990-2030)



Source: Authors' Projections using ATO (2021)

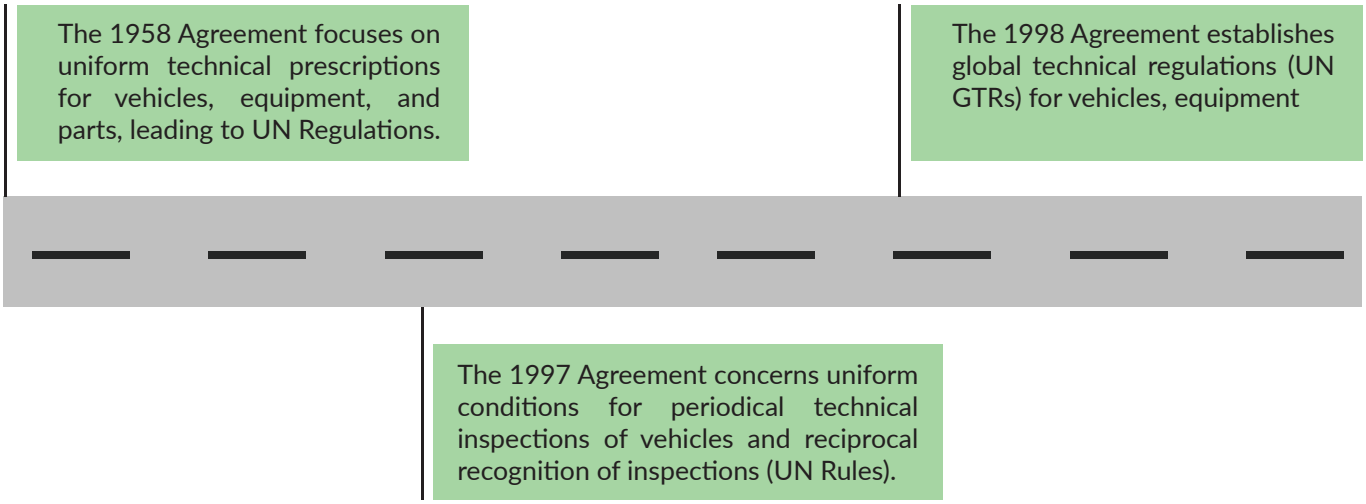
Safe Vehicle

The NRSS aims at improving vehicle safety performance by meeting the requirements of the United Nation vehicle regulation, enhancing motor vehicle inspection (MVI) systems, and meeting the requirements of the internationally recognized safety standards (GoP, 2018). Although this is an obvious policy framework, the development to date in 2025 shows that there were little progress and the general laggardness in effective implementation. Despite the heightened awareness on the vehicle safety standards and the growing prominence of the policy discussions (Shehryar, 2023), the enforcement of the regulations is not strong, especially in terms of focusing on the adherence to the current safety technologies, like airbags, anti-lock braking systems (ABS) and crashworthiness requirements of vehicles manufactured within the country. Moreover, the Asian Transport Observatory (ATO) notes that there are still institutional capacity gaps, poor compliance with the un vehicle safety standards, and lack of systematic regimes of national inspection (ATO, 2025). A large percentage of safety of the Pakistan vehicle fleet, particularly motorcycles and vehicle used in public can still be driven without detailed safety inspection, and that is what has been supporting the perpetual severity in crashes.

UN Standards for Car Manufacturing

Car manufacturing requirements are set at an international level. The World Forum harmonisation of Vehicle Regulations (WP.29) is mandated the responsibility to create worldwide standards related to the safety of the vehicle and its environmental performance. The United Nations Economic Commission of Europe (UNECE) oversees administering the WP.29 Forum and is based in Geneva. The legal background of the operation of the WP.29 is composed of three multilateral agreements which provide the legal framework on which United Nations member states may choose to voluntarily adopt this wide range of technical standards of motor vehicles.

Figure 4: WP.29 Multilateral Agreements



Source: UNECE (2019)

Pakistan joined the UNECE World Forum for Harmonization of Vehicle Regulations (WP.29) in April 2020. It was a key step towards aligning the automotive industry with the international vehicle manufacturing standards. Initially, Pakistan Standards and Quality Control Authority (PSQCA) enforced only 17 out of 160 UN vehicle manufacturing standards under the 1958 agreement (Najib, 2024). The rationale behind this step was the necessity to improve vehicle safety, minimize the environmental impact, and facilitate trade as Pakistan previously lacked comprehensive enforceable standards for manufacturing and import of vehicles. These 17 regulations mainly focus on fundamental safety standards like braking (UN R13H), steering (UN-

R79), lighting (UN R48), seat belts, and occupant protection yet they lack breadth required for protection of occupants in complex crash scenarios. The regulations UN R13 and R13H which ensure stable stopping operation in all circumstances focus on reducing the cases of rear-end collisions and loss-of-control incidents.

Further, UN R79 includes steering gear which enhances responsive handling required for evasive manoeuvring on overcrowded and poorly maintained roads in Pakistan. Regulations like UN R30 of pneumatic tires and UN R48 of lighting improve visibility and traction which directly affect the number of crashes at night and due to adverse weather conditions. Similarly, UN R14 and R16 are concerned with seat belt anchorages, UN R17 and R25 for seats and head restraints, UN R94, R95, and R135 are relevant to the frontal, side impact, and pole-side impact protection. These play a key role in minimising risk of injury in high-speed collisions. Other foundational standards include airbag standards like UN R121 and R114, safety glazing standards, standards rear-view mirror and camera, and anti-theft standards. All these regulations form a foundational cornerstone of the Auto Industry Development and Export Policy (AIDEP) that indicated a transition from no mandatory safety requirements to minimum standards that could help save lives, if enforced strictly (PSQCA, 2022). The safety implications of following the preliminary 17 standards are far-reaching especially in a scenario where vehicle defects contribute to human and economic cost of accidents. One example is of braking systems that can potentially reduce rear-end crashes, which are common on highways in Pakistan.

In spite of the advantages of regulations as mentioned above, the narrow nature of 17 standards creates loopholes that compromise the potential of regulations in improving road safety in Pakistan. Although the entry-level braking system is mentioned in regulations but the lack of advanced features such ads anti-lock braking system (ABS) implies that vehicles can skid during emergency brake which can add to multi-vehicle pile-up on a slippery road in the monsoon season. The absence of UN R78 in motorcycle braking system further poses a greater risk to two-wheeler users, who contribute to quarter of all deaths, since bikes are not equipped with ABS, resulting in frequent skids. Similarly, tyre standards guarantee basic quality but do not ensure wet grip or rolling resistance. Also, presence of seat belts and anchorages is good, but unless there are child restraint systems to accompany it, the vulnerable road users are left at greater risk as there is no legislation enacted in Pakistan yet for specialized child seats. Airbag and impact protection are important, but without electronic stability control (ESC) vehicles are likely to roll over on uneven roads, which is a major factor in fatal crashes.

Without these active safety nets in a country where driver training is typically informal and road conditions are unpredictable, loss-of-control accidents are likely to occur. In addition, emission-related regulations like UN R83 about stricter pollution controls are not followed, which leads to air quality deterioration that indirectly impacts the health of drivers and visibility in cities that have smog like Lahore. This demonstrates that these 17 standards are more of a safety ground than an all-encompassing protection for the occupants and environment, which continues to increase the rate of accidents in mixed traffic in the country.

Recently, Pakistan has expanded its mandatory list for vehicle manufacturing standards to 62 safety and quality standards for both imported and locally manufactured cars to meet IMF conditions. These standards are applicable for imported cars from October 1, 2025, and for locally manufactured cars from July 1, 2026 (Stephen, 2025). All imported cars will need a pre-shipment inspection certificate from specific accredited international bodies (like JEVIC in Japan or CAERI in China) before they can be shipped. Failure to get this will mean the vehicle is denied import clearance. The Engineering Development Board (EDB) is supposed to oversee compliance and can reject vehicles that pass the initial inspection but fail Pakistan's own standards. Only licensed commercial importers can bring vehicles in, and used cars face extra checks for mileage and accident history. On the other hand, local manufacturers have will have to get a "Type Approval"

certification for their vehicles, which will initially rely on testing in foreign labs until local facilities are built. The Pakistan Standards and Quality Control Authority (PSQCA) is supposed to oversee this for local cars.

The biggest problem isn't the plan itself, but who is in charge. The enforcement of these standards has become tangled in a major dispute between two government bodies. The PSQCA is the country's official national standards body. However, the EDB, under the Ministry of Industries and Production (MoIP), also claimed authority and assigned enforcement to itself for the new rules. Consequently, instead of a clear, unified system, the overlapping claims have caused a regulatory rift and a tug-of-war. This leaves everyone unsure of who is truly in charge, undermining the plan's credibility and effectiveness. While the PSQCA has approved a "Type Approval Scheme" to move forward, the lack of local testing labs and the overall coordination failure remain major hurdles.

This transition indicates a qualitative implementation of “Safety System” principles which enhances the status of Pakistan in global automotive quality standards. It is managed by the Engineering Development Board (EDB) under the New Energy Vehicles Policy 2025-2030 that encouraged electric vehicle adoption to comply with UN R101 on CO_2 emissions, R3 on retroreflectors, R4 on rear plates, and R148 on lighting devices, potentially extending the coverage of standards to visibility and urban pollution-linked health issues (UNECE, 2021).

Expanding the vehicle manufacturing standards have multifaceted implications. This transition addresses IMF concerns regarding trade barriers and environmental compliance that can possibly reduce vehicle-related pollution. However, this shift can also raise the cost of manufacturing for the local assemblers, which may pass costs on to consumers in a price-sensitive market.

These standards will help reduce the number of fatalities due to comprehensive upgradation of vehicles. The incorporation of ESC (UN R140) and ABS (UN R78) will prevent skidding and rollover collisions. If fully implemented, it can reduce the number of collisions approximately 15-25% according to the UNECE models (UNECE, 2021). Another critical gap filled is the protection of vulnerable road users. The implementation of UN R127 requires the manufacturing companies to design vehicle fronts that cause minimal harm to pedestrians and cyclists. Since approximately 41 percent of road victims in urban centres like Karachi and Lahore are pedestrians, this regulation is most important for the well-being of people (ATO, 2025). Furthermore, regulations like UN R121 ensure that even entry-level vehicles ensure some protection. However, enforcement problems in a decentralized system could delay the benefits unless there are strong inspection regimes to eliminate poor quality imports.

Furthermore, expanding the vehicle manufacturing framework and incorporating these regulations will increase the production cost but it will also enhance the export potential. This can help various local firms to compete globally, and international manufacturing firms will be more comfortable in expanding their facilities in Pakistan. On the other hand, higher costs may potentially stagnate the market growth from current 34 million registered vehicles and it will prevent the lower income segment from purchasing new, better equipped vehicles. On the environment front, stricter norms will reduce vehicular emissions, which will help Pakistan comply with its commitments under the Paris Agreement in context of rising urban PM2.5. Overall, short-term disruptions are likely to occur, but these standards promise a safer and cleaner mobility future that cares about human life and environmental safety rather than just the convenience of industry.

Safe Roads and Roadsides

The infrastructure design has a strong impact on the likelihood and the extent of traffic collisions. Such characteristics as unsegregated carriageways, subjecting vehicles to head-on risk, roads of

high speed, arteries with dangerous roadside conditions, and urban thoroughfares, which lack sufficient facilities to clear pedestrian or cycling movement, are just some examples of infrastructure components that increase the risk of collision. In low and middle-income countries, economic cost of road trauma is around 3%-6% of GDP, every year (Nazir et al., 2016).

Under the Strategy, the pillar of Safe Roads and Roadsides is designed to enhance the safety of the road infrastructure by adopting safer road designs, systematic blackspots treatments, inclusion of pedestrian road and cycling facilities, better signages and marks, and compliance with international road assessment standards as part of the Safe System Approach (GoP, 2018). The Strategy focuses on the engineering interventions to mitigate the severity of crashes and safeguard the vulnerable road users. The developments up to 2025 under this pillar show moderate development in some areas of the country. The data provided by the ATO shows that the vulnerable road users are the cause of a considerable percentage of road traffic fatalities in Pakistan, which is why infrastructure-based risks (such as unsafe crossings, the absence of segregated pathways, and dangerous road conditions) remain persistent (ATO, 2025).

Roads in Pakistan serve as shared conduits for a heterogeneous array of users, including pedestrians, bicyclists, motorcyclists, and motor vehicles. These groups cannot be separated, and this increases the probability of road crashes. Moreover, a considerable proportion of road users in Pakistan exhibit limited awareness of and compliance with traffic safety regulations, thereby increasing the risk of road accidents. Furthermore, the road infrastructure safety in Pakistan is significantly low, with only 1% of roads achieving 3-star iRAP ratings[1] in 2024. It means that roads are prone to high crash rates due to potholes, lack of pavements, and mixed traffic. The establishment of the Pakistan Road Assessment Programme (PakRAP) in February 2025 aims to evaluate national highways, identifying risks like sharp curves and lacking guardrails, which contribute to 4% of accidents from engineering faults. Urban areas like Lahore suffer from deteriorated pavements, increasing the vulnerability of pedestrians (WHO, 2021).

Table 1: Star Ratings of Road Safety

Star Rating	Pedestrian	Cycle	Motorcycle	Vehicle
★	No sidewalk or safe crossing	No cycle path or safe crossing	No motorcycle lane	Undivided road
★★★	Sidewalk	On-road cycle lane	On-road motorcycle lane	Wide centreline
★★★★★	Sidewalk and signalized crossing	Off-road dedicated cycle facility	Dedicated separate motorcycle lane	Safety barrier

Source: Global Status Report on Road Safety (2018)

Similarly, the poor urban planning disadvantages the pedestrian, whereby motorized transport is put into consideration at the expense of pedestrians (Haque & Rizwan, 2020). The absence of foot crossing, foot pavements, and road controls increases the risks of accidents. The neglect of vulnerable road users by the system indicates the existence of wider trends of transport planning exclusion, where policies have largely focused on catering to the interests of motorists at the expense of other forms of mobility (Irfan, 2024).

1.iRAP Star Ratings are used for road safety inspection, road safety impact assessments, and in designs. Star Ratings are an objective measure of the level of safety which is 'built-in' to the road through more than 50 road attributes that influence risk for vehicle occupants, motorcyclists, bicyclists, and pedestrians.

Safety improvements based on regional efforts and the use of corridors reflect the development of institutional interest around road design quality and road asset management (CAREC, 2022). Nevertheless, these interventions still are focused on the selected national highways and key corridors, whereas secondary and rural road systems still have a significant gap in their safety. Other indicators of the infrastructure improvements that are yet to be put in place may make a significant nationwide impact on reducing crash risk (Shehryar, 2023). Thus, the pillar of Safe Roads and Roadsides demonstrates partial improvements with the structural gaps; however, there is no full-scale systematic improvement as of 2025.

Safe Speeds

The NRSS has a safe speed pillar that aims to control vehicle speeds by the application of the evidence-based speed limits, enforcement protocols, community education, and speed engineering requirements in line with the Safe System Approach (GoP, 2018). The Strategy acknowledges speeding as one of the major risk factors in terms of frequency and severity of crashes, especially within urban environments and high-speed corridors. In Pakistan, there is still empirical evidence that excessive speed is an important cause of road traffic injuries, and so the sense of urgency of effective speed management interventions is justified (Memon, 2024). The gains in this pillar up to 2025 are minimal and localized but the general situation in the country remains stagnant.

On the other hand, urban areas are a victim of traffic congestion and high vehicle density. The urban traffic management lacks proper funding, outdated equipment, and staffing because the provincial budgets are focused on the minor urban services rather than specific traffic enforcement. The heterogenous traffic in high-density urban areas, such as pedestrians, rickshaws, and heavy transport using small potholed streets, overwhelms local police and makes the implementation of the protocol unrealistic and often leads to low-level infractions. The imbalance results in low levels of helmet and seat-belt law enforcement in cities, where the traffic volume increases the risk. This imbalance results in increased rates of accidents in urban areas due to unrestrained carefree driving, standardised signs, while highways maintain lower fatality rates (Irfan, 2024). Some urban centres, like Islamabad, have implemented the system of automated enforcement, speed cameras and robust highway control, facilitated by regional cooperation programs like the CAREC program (CAREC, 2022). The results of these initiatives are ineffective evident from high number of accidents that continue to take place. The policy dialogue and public awareness campaigns have been enhanced, but the consistency in the enforcement, the rural coverage, and the inclusion of traffic calming infrastructure have not been achieved yet (Shehryar, 2023). Thus, as of 2025, Pakistan's progress regarding safe speeds demonstrates incremental progress without nationwide impact.

Post-Crash Response

Post-accident interventions around the globe focus on the Golden Hour, which integrates emergency calls, pre-hospital care, and rehabilitation in accordance with the guidelines provided by the World Health Organization (WHO), thus reducing mortality by approximately 50% using effective response mechanisms. These measures comprise emergency response mechanisms to avert casualty and disability, mitigate the severity of injury and resultant pain, and preferably rehabilitate and reintegrate the crash survivors in the society. Delays in emergency responses increases the fatality rate. The time taken to transport victims to medical facilities is often prolonged and it results in more deaths. This is due to the lack of accessible healthcare services as well as the poor road infrastructure.

The pillar of the Post-Crash Response in the NRSS is of utmost importance as it is concerned with the reduction of mortality and long-term disability rates through enhanced emergency medical services (EMS), the coordination of trauma care systems, the standardization of data collection,

and institutional empowerment in accordance with the principles of the Safe System Approach (GoP, 2018). The Strategy focuses on quick first aid, combined rescue services, and improved hospital-based trauma services to avert unnecessary road crash deaths. Empirical data underline that emergency response time and inadequate infrastructure in terms of trauma care in rural and peripheral areas and the lack of inter-agency cooperation remain the critical factors that lead to preventable road traffic deaths (Memon, 2024).

Although provincial-level ambulance networks and motorway emergency services have been increased in some areas, these enhancements are disjointed (CAREC, 2022). Nationwide trauma registries and rural accessibility are still missing (Shehryar, 2023). In terms of rescue coverage, Punjab leads among the provinces with a Rescue 1122 Coverage in all 36 districts of the province. Recently, they have planned to extend their coverage to underserved towns in 39 new tehsils. Khyber Pakhtunkhwa (KP) followed Punjab's model of Rescue 1122 and currently serves 26 out of the 35 districts in the province. As of 2025, the aim is to expand the coverage to all districts of KP. Sindh has recently accelerated its highway operations to further expand its Rescue 1122 Coverage to district and tehsil levels with funding from the World Bank. The coverage in Balochistan, termed as MERC 1122, remains limited with the central control from Quetta. To expand its coverage, Balochistan has approved the established of 14 to 25 Emergency Response Centres on all major highways to cater high rate of road accidents. However, the resources at such centres remain limited: 2 fully equipped ambulances, 2 bikes, and 1 rescue vehicle.

Policy Implications

First and foremost, based on Becker (1968), it is essential to ensure two key parameters to prevent road users from breaking the traffic rules: probability and severity of punishment. The key is to maximize both the likelihood of getting caught and the amount of penalty imposed on violating the traffic laws. This is something most countries have ensured to enhance their road safety situation. Modifying Becker's notion of crime and punishment, we suggest that it is necessary to ensure both positive and negative reinforcement in terms of rewards and penalties, respectively. The motorway police of Pakistan have introduced the filing of First Information Report (FIR) above 150 kilometres per hour (km/h). This has resulted in immediate impact and must be practiced on all highways (not just motorways) across the nation with the threshold figure (in km/h) being 30 additional to the maximum speed limit. To ensure better road user behaviour, it is also essential to strengthen the licensing regime via a demerit points-based system. Islamabad has introduced this, yet the implementation is highly inconsistent. It must be ensured that these points are monitored efficiently and on exceeding limit, the suspension of license takes place immediately. Further, it is crucial to keep two-wheelers at the centre of the road safety policy of Pakistan, given the increasing proportion of motorcyclists in road accidents.

According to the World Economic Forum, Singapore tops the list of Road Quality Index with a score of 6.5. Pakistan is ranked 70th on the same list. What Singapore has ensured is a strict vehicle policy in terms of importing only those vehicles that satisfy 52 vehicle safety requirements as per their Land Transport Authority (LTA). Further, Singaporean vehicles between 3 and 10 years old are to be inspected every other year, whereas those with more than 10 years are supposed to be inspected every year. The cabs in Singapore, on account of excessive usage, are inspected every six months. A lot of focus is on driver education, and the Singapore Traffic Police takes the lead on this. The Mobile Education Units (MEUs) in Pakistan are doing a good job in spreading awareness on road safety; however, the impact of such talks is limited. It is imperative to make road safety awareness a part of the curriculum at school level to educate the road users from a young age.

Third, Pakistan should adopt the "Ten-Step Plan for Safer Road Infrastructure" developed by UN for all countries. This framework provides a roadmap to improve road safety. Effective infrastructure also requires legislative alignment. In Pakistan, safe road infrastructure should inco-

rporate wider lane widths, rumble strips, wider depressed median barriers to avoid jumping of cars to other side, recoverable slopes for out-of-control vehicles, raised pedestrian crosswalks, roundabouts, motorcycle-only lanes in cities, enhanced delineation for horizontal curves, centrelines buffer areas, and standardized road signs (Ehsani et al., 2023). The Bloomberg Philanthropies' Initiative for Global Road Safety advocates evidence-based interventions, such as speed-reducing elements on pavements, which have allegedly decreased pedestrian fatalities in cities by 20%. The longstanding issues are the difference in funding between low and middle-income countries (LMICs), as poor maintenance makes the risks worse, which consequently highlights that international aid is needed to acquire sustainable materials and design solutions (Bloomberg Philanthropies, 2025).

Fourth, internationally, highways benefit from strict protocols due to high speeds and traffic flow, including dedicated patrols, electronic surveillance, and zero-tolerance for violations, as per WHO's Safe System pillar on safer road users. Urban areas often lag owing to complex traffic, leading to selective enforcement and higher accident rates from minor infractions. Best practices used involve technology like e-challans for consistency of enforcement, reducing urban chaos by 15-20% in cities with integrated systems (WHO, 2021). This can be explained by the presence of jurisdictions, such that highways are managed by national organizations, whose surveillance capabilities are proactive, and the denser urban areas are managed by local police that are overworked, only to increase such issues as unlawful parking and over speeding. Recent analyses in the world propose that this difference must be bridged by equalized distribution of resources to address the gap, with emphasis given that weak urban regulations exacerbate the weaknesses of the low- and middle-income countries (LMICs) (OECD, 2015).

Lastly, Pakistan must adopt strategies of post-crash response that are based on creating the required capability to provide immediate attention and stability at the crash sites, provision of rightful transport through the medically equipped ambulances to the health facilities, sufficient provision of hospital-based trauma care, and rehabilitation services where possible to facilitate reintegration into active life (SSATP, 2025). In 2009, the Federal Road Safety Commission (FRSC) of Nigeria came up with a pilot program that led to the setting up of emergency ambulance centres around the capital. The project itself achieved success in terms of the reduction of the response time and significant improvement of the effectiveness of emergency responding, and the same experience has been further used to inform the national application of the system. The ambulance service system has been developed together with the establishment of road-traffic crash clinics on major highways in Nigeria. These clinics do not just treat the road-accident victims only but also treat people who have been affected by other kinds of accidents and ailments (SSATP, 2025). Pakistan should try and replicate the same post-crash mechanism.

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