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EVALUATING AND UNDERSTANDING NEED FOR TRAFFIC MANAGEMENT EDUCATION IN HIGHER SECONDARY CURRICULUM TO REDUCE ACCIDENTS AND ROAD RAGES IN AHMEDABAD CITY

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Abstract

*"**A Sound and Strong Urban Paradox:** the warning sign becomes an act of adverse action. Where the world interprets the yellow traffic signal as a cue to slow down, the city of Ahmedabad often treats it as a prompt to accelerate". While others perceive caution in the yellow light, the local road user frequently finds momentum, producing a distinctive and concerning road culture in the city of Ahmedabad.*

The motivation for this study emerged not merely from accident statistics or policy concerns, but from a lived urban experience that provoked deeper reflection on how traffic behavior is learned and mislearned. During an early morning commute in Ahmedabad, a taxi driver maneuvered aggressively, repeatedly violating signals, neglecting lane discipline, and navigating intersections with confidence bordering on recklessness. When questioned, he disclosed that he operated a motor driving training school while driving commercially in the mornings. Further conversation revealed a troubling gap in his understanding of basic traffic management principles. Lane markings, in his view, served only as loose visual guides rather than essential regulatory tools.

This encounter triggered a critical realization. If individuals responsible for training new drivers possess limited or inaccurate knowledge of traffic management, the quality of behavioral learning transmitted to future road users becomes questionable. In the absence of structured traffic education, the process through which individuals develop disciplined and responsible conduct in complex urban environments remains uncertain.

***The study also forefronts a systemic concern:** enforcement agencies continue to struggle despite expanded policing and surveillance. While necessary, enforcement is reactive and intervenes after unsafe habits become normalized. Existing research largely emphasizes awareness of traffic rules but insufficiently addresses traffic management competence, particularly among youths aged 17–22 entering independent road use.*

This paper synthesises scholarly literature and analyses newspaper-reported accident cases in Ahmedabad to illustrate how educational deficiencies manifest in practice. The findings support embedding structured traffic management education within the higher secondary curriculum to foster self-regulation and promote safer urban mobility.

Keywords: *Road Traffic Management Education; Higher Secondary Curriculum; Road Safety Education; Newspaper Content Analysis; Youth Road Behaviour; Road Rage; Ahmedabad city.*

1. INTRODUCTION:

Road traffic accidents have become one of the most pressing and complex challenges faced by contemporary urban centres in India, rapid urbanisation combined with a sharp rise in motor vehicle ownership has significantly altered road usage patterns. According to various published reports, daily vehicle sales in India ranges between approximately 77,100 units depending on seasonal demand, suggesting that nearly 3200 new vehicles are added to the road network every hour. This rapid motorisation has placed immense pressure on already constrained urban infrastructure and has fundamentally changed the dynamics of mobility in Indian cities.

Ahmedabad, a major million-plus metropolitan city in the state of Gujarat in India, exemplifies this trend. The city has witnessed rapid population growth, increasing private vehicle ownership, and large-scale expansion of roads and highways. Despite these developments, road traffic accidents remain a persistent and serious concern. High accident frequencies, fatalities, severe injuries, and incidents of road rage continue to be reported, raising significant concerns about urban safety. These incidents impose substantial human, social, and economic costs on individuals, families, and the wider community.

The persistence of road traffic accidents highlights a fundamental imbalance between the growing demand for mobility and the capacity of cities to ensure safe road environments. Several correlated factors contribute to unsafe road conditions in Indian cities. Infrastructure-related issues include poor road design, uneven alignment of the road surface, potholes, inadequate maintenance, and improperly end-number of placed speed breakers on city streets junctions and main roads. In addition, widespread encroachments such as illegal parking and street vending reduce effective road width and disrupt traffic flow, further increasing the risk of accidents.

On top of that, behavioural factors largely compound these infrastructural deficiencies. A lack of driving knowledge and discipline is evident in practices such as wrong-side driving, poor lane adherence, excessive honking, overspeeding, reckless manoeuvring, and frequent violations of traffic rules. In many cases, these behaviours escalate into aggressive driving and road rage. Accident data from Ahmedabad consistently indicate that individuals between the ages of 18 to 45 account for a disproportionately high share of fatalities and serious injuries. This age group represents a critical segment of the productive workforce, and road traffic injuries among them extend beyond public health concerns to affect economic productivity and national development.

Policy responses to road traffic accidents in India have largely focused on infrastructure development, rigorous enforcement of traffic laws, and post-crash emergency care. While these measures are essential and have yielded limited improvements, their overall impact has remained inconsistent and insufficient. A key limitation of this approach is its reactive nature. Unsafe driving behaviours are typically addressed only after they have become habitual. Cultural tendencies to disregard traffic rules, coupled with inconsistent enforcement, have normalised risky driving practices. By the time penalties are imposed, behaviours such as speeding, signal violations, and aggressive driving are often deeply rooted, contributing to persistent accident rates and rising road rage incidents.

The root causes an important but often overlooked contributor to this problem is the "lack of formal education in road safety and traffic management". Many individuals begin driving without a clear understanding of the purpose of traffic regulations, road user responsibilities, or basic traffic dynamics. Driving schools frequently adopt a procedural approach focused on licence acquisition rather than comprehensive safety education, driving science, and rules of the road. When parents and peers themselves display casual or unsafe attitudes towards road use, these behaviours are reinforced and transmitted across generations, perpetuating a cycle of poor traffic discipline.

Enforcement alone cannot compensate for the absence of foundational knowledge and early behavioural conditioning. Road safety and traffic management require understanding, awareness, and responsible attitudes that must be cultivated over time. Education differs fundamentally from enforcement in this respect. It has a preventive function, shaping values, attitudes, and decision-making before unsafe behaviours become established. Through sustained learning, education can influence how individuals perceive risk, responsibility, and shared road space.

Higher secondary education represents a critical stage for such intervention. Students aged approximately 17 to 22 undergo significant cognitive, social, and behavioural development. This period often corresponds with increased independent road use, including riding two-wheelers, travelling alone, and learning to drive cars. In many cases, these activities occur without structured guidance beyond minimal licensing requirements. Introducing road traffic management education at this stage can equip students with the knowledge and skills needed to make informed and responsible decisions on the road.

Despite its importance, the Indian school education system does not offer any exposure to structured road traffic management concepts. Topics such as junction behaviour, lane discipline, traffic flow dynamics, conflict avoidance, pedestrian safety, and emotional regulation while driving are largely absent from the curriculum. This omission leaves young road users ill-prepared to navigate complex urban traffic environments and increases their vulnerability to accidents and aggressive driving behaviour. Existing research has consistently demonstrated that early education in traffic management and road safety can significantly reduce accident risks; however, this evidence has yet to be adequately translated into educational practice in India.

This paper argues that the continued exclusion of structured road traffic management education from the higher secondary curriculum constitutes a critical gap in India's road safety framework. Using Ahmedabad as a contextual case study, the paper synthesises findings from existing scholarly literature and supplements them with evidence drawn from local newspaper-reported accident narratives. By grounding the analysis in both academic research and lived urban realities, the study highlights the necessity of integrating road traffic management education into higher secondary schooling as a sustainable, preventive strategy for reducing accidents, improving traffic discipline, and fostering a generation of safety-conscious road users.

Recent reports reveal a staggering road safety crisis gripping India. On average, emergency services receive about 55 calls every hour related to road accidents, while roughly 20 plus lives are lost in these crashes each hour. A Sandesh newspaper (Ahmedabad) report dated August 30, 2025, highlighted the national scale of the tragedy: in 2023 alone, India recorded 17 to 22, 900 fatalities from road accidents, accompanied by 481,500

emergency calls. Many survivors face permanent physical disabilities, adding long-term strain on families and healthcare systems. What's particularly alarming is that 66.5% of victims belong to the 18 to 45 age group, the very demographic that should be powering India's economic growth. This loss of a productive generation demands urgent action.

Zooming into Gujarat and its bustling million-plus city Ahmedabad sharpens the focus even further. A Sandesh article from August 28, 2025, disclosed that Gujarat logged 475 accident-related emergency calls per hour, totalling 108,000 calls in just 8 months Jan to August 2025 alone statewide with 17 to 22. These localized figures underscore the pressing need for targeted interventions, making this study's focus on curriculum-based road safety education both timely and essential.

LITERATURE REVIEW:

1. Baniya S. & Timilsina, A. (2018)
Title: Knowledge and Practice of Road Safety Rules and Regulations among Secondary School Students:
This quantitative cross-sectional study looked at 240 secondary students (Grades 11-12) in Nepal, using structured self-administered questionnaires.
It uncovered a big "knowledge-practice gap" 59.2% had moderately good knowledge, but only 10% showed solid real-world practice. Shockingly, 91.6% admitted to driving without a license, pointing to poor compliance despite what they knew. No real link between knowledge and behaviour means info alone doesn't cut it for change. This pushes for practical, curriculum-based road safety education that hits both thinking and habits in teens.

2. Karthika, P. (2016)
Title: Effectiveness of Structured Teaching Program on Road Safety Measures among Primary School Children (In Bangalore)
A pre-experimental one-group pretest-post-test study with 60 primary kids in Bangalore. Strong proof here that **Structured Teaching Programs (STP)** really boost road safety know-how in young kids post-test scores jumped way up from pre-tests, showing targeted lessons work wonders on signs and rules. Early intervention builds habits for life. It backs your idea that a formal school curriculum beats random campaigns. Great baseline for arguing road safety belongs in schools, not just outside programs.

3. Ramya B., Rakshita K. Mane, Anakha M., Sarath Prakash (2024)
Title: Effectiveness of Plan Teaching Programme on Road Traffic Accidents (RTA) among Early Adolescents
Fresh 2024 study on early teens in Bengaluru, checking out planned teaching's impact. Spotlights how these transitioning road users (10–14 years) are super vulnerable, but structured modules sharpen risk perception and cut RTA odds. Kids this age soak it up when it's part of school.

4. Ministry of Road Transport & Highways (MoRTH, 2011)
Title: Road Safety is No Accident (Policy Report)
Key government report laying out India's road safety strategy via the "4Es" (Engineering, Enforcement, Education, Emergency Care).
This policy cornerstone puts "Education" front and centre for prevention but flags huge gaps in school implementation.

5. Maqbool, Y., Sethi, A., & Singh, J. (2019)
Title: Road Safety and Road Accidents: An Insight

In-depth review of systemic issues driving India's rising road accidents. Dives into human factors like speeding, ignorance, and ignoring signs as top fatality causes. Fines and cops have hit limits time for education to shift behaviours. Teens shape these attitudes, so your curriculum angle is spot-on for long-term culture change. Key for your problem statement.

6. Shetty RS, Pahwa V, Vibha SP, Kamath A, Nair SR. (2018)
Title: Road Safety and the Community: An Awareness Survey among the Coastal Population of Karnataka
Cross-sectional survey of 381 adults in Udupi, linking demographics to safety knowledge. Shows schooling boosts knowledge but practice lagged even then. Calls for tailored campaigns

7. Keerthana B, Vishnu Priya V, Gayathri R. (2021)
Title: Awareness on Road Traffic Accidents Among College Students
Online survey of 100 college kids on signals, speeding attitudes. Analysis for Journal: 97% know about RTAs, but 41.6% speed for thrills style trumps safety. Seminars aren't enough; need curriculum tackling psych drivers. Proves starting in secondary school, not college, is crucial.

8. Lakshmi R. Kalbandkeri, Boramma G., Shreeshail Ghooli (2018)

Title: Knowledge and Practice of Road Safety Measures among Undergraduate Medical Students (MR Medical college (Kalaburagi)
Study on med students in Kalaburagi, seeing if their training improves practices. Even future docs (high knowledge, 68-99%) withheld on practice (58% helmets). Males sped and jumped signals more. Nonetheless, smarts don't equal safety need values-based teaching.

9. Margie Peden, Jane Elkington, Pratishtha Singh (UNICEF, 2024)
Title: Child and Adolescent Road Safety in South Asia (Regional Report)
2024 UNICEF overview for under-20s in the region. RTAs top deaths for kids over five; pushes "Safe Systems" with early education for safe users. India/South Asia takes 78% of global hits.

OBJECTIVES OF THE STUDY:

A. Primary Objective
The primary objective of this study is to **evaluate and establish the need for integrating structured road traffic management education within the higher secondary curriculum** to reduce road accidents and road rage in Ahmedabad.
Specifically, the study seeks to examine how the absence of formal, curriculum-based traffic management education at the higher secondary level contributes to gaps in traffic knowledge, unsafe road behaviour, poor traffic discipline, and emotional responses among adolescents and young adults aged **17 to 22 years**, who are increasingly engaged in independent road use.
B. Secondary Objectives: -
The secondary objective of this study is to synthesise existing literature on road safety education, youth traffic behaviour, and accident action in order to identify conceptual, educational, and methodological gaps, particularly the limited emphasis on practical traffic management skills and their absence within the higher secondary curriculum, and to examine the relevance of this stage as a critical intervention period for promoting responsible road behaviour and long-term road safety.

RESEARCH QUESTIONS: -

RQ1:
What gaps exist between knowledge, attitudes, and actual road-use behaviour among young adults (Age 17 to 22) in Ahmedabad, and how are these gaps reflected in unsafe driving practices, road rages?
RQ2:
Why is the higher secondary stage a critical intervention period for introducing structured road traffic management education, and how do existing evidence and stakeholder perspectives support its integration into the formal curriculum?

SCOPE OF THE STUDY

This study pushes for adding road traffic management education to higher secondary curricula in Ahmedabad to implements accidents and road rage among young drivers (ages 17-22). It's conceptual and analytical, showing how missing formal traffic lessons leads to risky urban behaviours. Using Ahmedabad's chaotic, motorizing streets as a case study packed with mixed traffic and violations, we highlight education gaps without chasing broad stats. Data draws from papers, policies, and newspaper accident reports for real-life insights on habits and incidents.
We focus on knowledge shortfalls and behaviours, noting infrastructure and enforcement as side factors. No surveys or observations here this lays conceptual groundwork for later phases, arguing school-based traffic education is a proactive win for safer roads and public health.

RESEARCH METHODOLOGY

This study implements a conceptual and analytical research design based whole on secondary data sources. The research is primarily created in a structured narrative review of existing scholarly literature on road safety education, youth traffic behaviour, accident causation, and curriculum-level interventions. In addition to academic publications, the study incorporates systematic analysis of publicly available materials, including newspaper-reported road accident cases and credible online reports, to contextualise theoretical insights within real urban conditions.

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Newspaper articles and digital media reports are examined as partially statistical proof, as situational evidence reflecting behavioural patterns, traffic management deficiencies, and recurring accident factors within Ahmedabad. Through thematic synthesis and critical interpretation of these secondary sources, the study identifies conceptual, educational, policy, and behavioural gaps related to the absence of structured road traffic management education at the higher secondary level.

The research does not involve primary data collection at this stage; rather, it relies on analytical integration of documented evidence to build a strong conceptual foundation for curriculum-level intervention in road traffic management education.

RESEARCH DESIGN

The research follows an **interpretive and analytical approach**, aimed at understanding patterns of road user behaviour, educational gaps, and complete limitations in current road safety interventions. Rather than measuring causality through experiments or surveys, the study focuses on contextual understanding, making it suitable for establishing conceptual foundations for curriculum-level interventions.

Data Sources

Two principal categories of secondary data were utilised:

1. **Academic Literature**

Peer-reviewed journal articles, government reports, policy documents (including those published by the Ministry of Road Transport and Highways), and international agency reports (such as UNICEF) were reviewed to examine:

- Road safety education practices
- Knowledge–practice gaps among young road users
- Behavioural and psychological aspects of traffic risk
- Policy emphasis on education versus enforcement

2. **Newspaper-Based Accident Analysis**

Reports of road traffic accidents published in leading local newspapers in Ahmedabad were analysed to capture **real-world manifestations of unsafe driving behaviour**. These reports were examined to identify recurring factors such as overspeeding, lane indiscipline, signal violations, junction-related conflicts, and instances of aggressive driving and road rage. Newspaper narratives were used not as statistical proof but as **related evidence** to bridge the gap between academic findings and lived urban traffic realities.

Analytical Approach

A subject analysis was done to identify recurring patterns across both literature and newspaper data online and offline authentic articles. Themes related to traffic management competence, behavioural lapses, emotional regulation, and systemic educational deficiencies were extracted and compared. This triangulation enabled the study to connect scholarly insights with city-specific accident narratives, strengthening the revealing validity of the findings.

Overall Accident & Death Burden

- Gujarat ranks 7th nationwide for overspeeding-related fatalities.
- One-year Gujarat stats shown ~7,278 road accident deaths 2024 and
- In the year of 2025 till the figures increased to 1,78,000 to total calls-108 service were noted in Gujarat state alone .
- Overspeeding drove 6,557 crashes, dwarfing all other factors.
- Other reasons" caused just 729 incidents, underscoring behaviour as the core issue.

In newspaper terms, "Overspeeding" really covers:

- Poor speed judgment
- Inability to read traffic flow
- Impatience
- Emotional driving
- Lack of hazard anticipation
- Wrong-side driving

The 18 to 45 age group dominates fatalities, precisely those navigating higher secondary and early adulthood.

Untrained or poorly prepared youth struggle most with:

- Early exposure to complex traffic
- Independence without proper/formal training
- Imitation-based learning (from parents, friends, relatives, siblings, etc.)
- Zero formal traffic systems education

Ignorance and careless approach: We have seen that even when people know the rules, like traffic laws, they often just ignore them on purpose. This shows a big blind spot when it comes to taking safety signs or guidelines seriously. Looking at reports from major newspaper stories on big accidents, the main takeaway is simple: it's all about people's attitude toward following and understanding traffic rules; following are the major factors

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Behavioural Factors

1) Insufficient knowledge of road safety rules combined with careless attitudes.
2) Failure to maintain lane discipline.
3) Misuse of high-beam headlights during night driving.
4) Wrong side driving and risky shortcuts.
5) Excessive honking.
6) Overcrowding on roads due to high population density and vehicle clustering.
7) Distracted driving from excessive mobile phone use.
8) Reckless on-road maneuvers, especially by young drivers.
9) Speeding or rash overtaking (common in recent SG Road incidents).
10) Drunk driving (linked to multi-vehicle pileups).
11) Parking on highways and parking the vehicle in no-parking zones
12) Overloaded delivery vehicles to maximize the profits.
13) No stoplight or taillights for trollies and carriages, tractors specially in small towns

Infrastructural Factors

1) Road encroachments narrowing lanes and disrupting traffic flow.
2) Poor road alignment, including potholes, uneven patches, and humps without road marking.
3) Substandard road engineering (e.g., inadequate signage or medians).
4) No backup plans from municipality for the road constructions
5) Poor signal maintenance on major junctions.

Systemic Factors

1) Weak law enforcement and lax penalties.
2) Vehicle mechanical failures (e.g., brake, engine failure issues)
3) Poor visibility due to various factors such as weather, smog etc.
4) Poor maintenance of roads
5) Over aged (Old) vehicles- un-maintenance unfit to the roads.

Comparison with Worlds some of the similar cities how the traffic behaviour works.

Feature	Ahmedabad, India	Guangzhou, China	Bangkok, Thailand	London, UK	Sao Paulo, Brazil	Tokyo, Japan
2025 Est. Population	~9.06 M (metro estimate)	~14.88 M	~11.39 M	~9.84 M	~22.99 M (metro)	~14.20 M (city)
Primary Vehicle / Mode	2-Wheelers dominant (~72%) (Indian cities trend)	Cars + LMV + heavy transit ridership	Sedans & pickups + tuk-tuks	Public transit (Tube, buses)	Cars + heavy rail + buses (modal mix ~32% public, 31% walk)	Public transit + cars; transit ranks high in mobility readiness
Driving Education Style	Informal / basic	Structured / technical	Structured / refined	Rigid / formal testing	Mixed formal/informal driver training (Brazil standards)	Structured, regulated with strict safety emphasis
Teaching Philosophy	Impulsive (gap-finding)	Mechanical discipline	Patient / defensive	Absolute rule adherence	Mixed due to varied driver background	Safety-first, disciplined compliance
Enforcement Style	E-challan transition	Social credit linked	High monitoring & fines	Rigid CCTV automated	Proactive but varied enforcement with evolving traffic management	Strict rule enforcement + tech campaigns
Lane Discipline	Low	Moderate-High	Moderate	Strict	Moderate (high congestion challenges)	High
Signal	Improving	High	High	Absolute	Variable	High

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Adherence	(camera)				(enforcement + congestion)	
Fatalities (relative)	**High (~5.5–6.0/10k) estimated**	**Low (~1.5-2.0) China targets**	**Moderate/declining**	**Lowest (<1.0)**	**~6.18/100k (11.7/100k state) Sao Paulo state road fatality**	**Low (~0.7–1.0/10k) Japan has**

Table: City-wise Road Traffic Fatalities (2019–2023)

City	2019	2020	2021	2022	2023	Data Source
Ahmedabad, India	~398	~410	~398	~465	535	NCRB & Times of India
Gujarat State, India		617	7452	7618	7854	Sandesh Newspaper 11.12.2025
London (Greater London), UK	~125	~96	~112	~125	~131	Transport for London
Guangzhou, China	N/A	N/A	N/A	N/A	N/A	Municipal data not publicly disaggregated
Bangkok, Thailand	N/A	N/A	N/A	N/A	N/A	City-level data unavailable (not been published)
São Paulo, Brazil	N/A	N/A	N/A	N/A	N/A	City data restricted; national aggregates used
Tokyo, Japan	~230*	~200*	~215*	~220*	~210*	Tokyo Metropolitan Police (summary reports)

RESEARCH GAP:

Primary Research Gap

despite extensive national and international research on road safety and traffic behaviour, significant gaps remain in understanding how formal education influences real-world driving practices among young urban road users in India. Existing studies largely emphasise awareness of traffic rules, signage, and safety equipment, but offer limited insight into whether adolescents and young adults possess the traffic management competence required to navigate complex urban environments. Critical aspects such as lane discipline, junction behaviour, traffic flow understanding, conflict anticipation, and emotional regulation while driving are rarely examined within structured educational frameworks.

A continuing knowledge vs practice gap is consistently reported across studies involving secondary school students, college students, and even professionally trained populations. While high levels of awareness are documented, these do not reliably translate into safe driving behaviour, particularly among individuals aged 17 to 22 years who are entering a phase of independent road use. However, existing research seldom investigates how the absence of curriculum-based traffic management education at the higher secondary level contributes to this disconnect, nor does it adequately address the growing issue of road rage and aggressive driving as behavioural outcomes of inadequate early training.

Methodologically, much of the literature relies on self-reported surveys and aggregated accident statistics, which capture general trends but fail to reflect the everyday realities of urban traffic behaviour. There is limited research that integrates academic insights with city-specific evidence, such as newspaper-reported accident narratives, to the context how unsafe behaviours and traffic mismanagement manifest in lived urban settings.

The present study addresses these interconnected gaps by combining a critical review of existing literature with an analysis of newspaper-reported road accidents in Ahmedabad. By situating road safety education within a formal, curriculum-based traffic management framework at the higher secondary level, the study reframes education as a preventive and enabling intervention aimed at reducing accidents, improving traffic discipline, and mitigating road rage among young urban road users.

While Secondary Research Gap

Even though research and government policies stress the value of road safety training, young adults they knew the traffic rules, but they don't follow them on the road. Schools rarely embed this education into their regular classes, and quick awareness drives aren't cutting it Worse., today's studies and programs skip over key real-life skills, like maintaining lane position, navigating intersections, predicting hazards, and staying calm under pressure stuff that's vital in chaotic urban driving.

JUSTIFICATION OF METHODOLOGY

Given the exploratory nature of this first paper, and its objective to establish the **conceptual and contextual necessity** of formal road traffic management education, a secondary-data-driven approach is appropriate. This methodology allows for a broad synthesis of existing knowledge while grounding the analysis in local urban experience. The study is positioned as a foundational inquiry that informs subsequent empirical phases involving primary data collection.

ETHICAL CONSIDERATIONS

All data used in this study were obtained from publicly accessible sources. No personal identifiers were analysed, and no direct interaction with human subjects was undertaken at this stage of the research.

ACRONYMS:

- NCRB: National Crime Records Bureau (NCRB)
- MoRTH: Ministry of Road Transport and Highways

CITATIONS

[1] Sao Paulo is one of the world's largest megacities at ~22.99 M (including metro area) in 2025. https://worldpopulationreview.com/cities/brazil/sao-paulo
[2] Tokyo remains Japan's most populous city with ~14.2 M (city proper). https://en.wikipedia.org/wiki/Demographics_of_Tokyo?utm
[3] https://timesofindia.indiatimes.com/city/ahmedabad/blood-on-asphalt-ahmedabad-climbs-to-eighth-spot-nationally-in-accident-fatalities/articleshow/123643639.cms
[4] Transport & Modal Share
[5] Sao Paulo has a large public transport share (~37%) and significant pedestrian travel (~31%), with cars accounting for less than half in total trips. https://transformative-mobility.org/wp-content/uploads/2023/12/Sao-Paulo-Deep-Dive.pdf_
[6] Tokyo's mobility system is highly rail + bus oriented, ranking high globally in mobility readiness and safety. https://www.oliverwymanforum.com/mobility/urban-mobility-readiness-index/tokyo.
[7] Road Safety
[8] Japan records some of the world's lowest road fatality rates per vehicle, around 0.4 deaths per 10,000 vehicles historically. https://www.itf-oecd.org/sites/default/files/japan-road-safety.pdf?
[9] Sao Paulo state traffic fatality rate (2023) was ~11.7 per 100,000 — illustrating significant road safety risk at the state level. https://www.linkedin.com/pulse/brazilrap-s%C3%A3o-paulo-launches-first-state-programme-eliminate-high-risk-22rbc/
[10] Crime & Urban Safety- Sao Paulo faces significant crime challenges on public transport (e.g., ~297 robberies/thefts per 100,000 inhabitants). https://interlira-reports.com/featured/an-analysis-of-crime-in-sao-paulo-public-transport/08/05/2024/
[11] Tokyo & London generally maintain lower violent crime rates per capita relative to large global cities (not shown in chart but supported in global indexes).

Reference: Local New paper analysis:

[1] Sandesh News Paper- Ahmedabad addition dates 12th, 28th 30th Aug 2025,
[2] Sandesh News Paper- Ahmedabad addition dates 03rd, 27th Sept 2025,
[3] Sandesh News Paper- Ahmedabad addition dates 06th, 09th Nov 2025,
[4] Ahmedabad Mirror- Ahmedabad Addition dated 9th Nov 2025
[5] Sandesh News Paper- Ahmedabad addition dates 07th, 11th Dec 2025,

[6] https://english.gujaratsamachar.com/news/gujarat/498-accidents-daily-21-injured-every-hour-as-gujarat-sees-surge-in-road-accidents-25853863375.html
[7] https://www.thehindu.com/business/Industry/auto-retail-sales-in-cy25-rises-771-yoy-to-over-281-crore-units-fada/article70477598.ece
[8] https://english.gujaratsamachar.com/news/gujarat/19-road-accident-injuries-every-hour-in-gujarat-this-year-16483369645.html
[9] https://www.gujaratsamachar.com/news/gujarat/gujarat-accident-statistics-2025-ahmedabad-highest-injuries-60490737651.html
[10] https://sandesh.com/gujarat/news/maru-saher-maru-gaam/ahmedabad/gujarat-news-the-number-of-accidents-in-the-state-increased-by-eight-percent-in-a-year-108-received-178-lakh-calls-in-the-year-2025
[11] https://timesofindia.indiatimes.com/city/ahmedabad/amdavadis-made-3l-calls-to-emri-last-year-837-a-day-on-average/articleshow/126339134.cms