Road Safety Audits as a Strategic Tool for Fatality Reduction and Cost Efficiency in the Saudi Transportation Sector

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Abstract

Road Safety Audits (RSAs) are increasingly recognized as an essential component in modern road design and traffic safety management. The 2024 Saudi Highway Code mandates the implementation of RSAs for new highway projects and improvement works at various stages of planning, design, and construction. This academic article explores the significance of RSAs in achieving key objectives of Saudi Arabia's Vision 2030, particularly in reducing road traffic fatalities, improving infrastructure efficiency, and supporting sustainable urban development. The analysis highlights how RSAs not only enhance road safety but also lead to substantial economic, social, and environmental benefits. The formal integration of RSAs into the Saudi Highway Code represents a strategic shift towards a proactive, system-wide safety approach, aligning technical, institutional, and policy efforts with global best practices.

1-Introduction

Road traffic collisions remain a critical public health and economic challenge worldwide, particularly in developing and rapidly urbanizing regions. In Saudi Arabia, high road fatality rates have historically posed significant concerns, prompting governmental efforts to adopt more rigorous road safety measures. One of the most effective interventions in the road safety domain is the **Road Safety Audit (RSA)**—a formal, independent, and systematic process that evaluates road infrastructure projects at various stages to identify potential safety issues and recommend improvements.

The 2024 update of the Saudi Highway Code marks a significant advancement in national transport policy by making RSAs mandatory for all new and upgraded highways. This paper examines the multifaceted impact of RSAs within the Saudi context, focusing on their contributions to traffic fatality reduction, cost efficiency, smart city development, and institutional strengthening under the framework of **Vision 2030**.

2-Road Safety Audits in the Saudi Highway Code

The 2024 Saudi Highway Code introduces RSAs as a compulsory process during the planning, design, construction, and early operational stages of road infrastructure projects. This aligns with international standards and demonstrates Saudi Arabia's commitment to adopting proactive safety management practices.

RSAs are conducted by independent, qualified auditors who assess road design elements for potential hazards affecting all users, including drivers, pedestrians, cyclists, and vulnerable populations. The process fosters a systematic approach to prevent crashes before they occur, integrating safety considerations directly into the design workflow rather than relying on reactive measures post-construction.

3-RSAs and Vision 2030: Strategic Alignment

3-1 Reducing Traffic Fatalities and Injuries

Road traffic injuries are among the leading causes of death in the Kingdom. RSAs address this challenge by identifying design flaws, visibility issues, inappropriate speed limits, and conflict points at intersections and crossings. Corrective actions proposed by RSA teams directly contribute to reducing crash risks, injury severity, and overall fatality rates—supporting the national target of decreasing road deaths in line with global safety benchmarks.

3-2 Improving Infrastructure Quality and Cost Efficiency

Implementing RSAs leads to optimized infrastructure design with fewer long-term maintenance and retrofit needs. The benefits include:

- Lower lifecycle costs due to fewer crashes and damage.
- Improved traffic flow and mobility, especially at complex junctions.
- Enhanced design usability for pedestrians, cyclists, and public transport.

This contributes to efficient budget allocation and a higher return on infrastructure investments.

3.3 Economic Benefits and Productivity Gains

Traffic crashes impose substantial costs related to healthcare, emergency services, insurance claims, and lost productivity. RSAs help reduce:

- Direct economic losses from collisions.
- Indirect costs from traffic congestion and travel delays.
- Risks to logistics and freight networks, improving supply chain reliability.

This improved road safety profile makes the Kingdom more attractive for international business and investment

4-Discussion

The institutionalization of RSAs within the Saudi Highway Code sets a precedent for road safety governance in the Gulf region. Compared to traditional safety reviews, RSAs are dynamic, forward-looking, and adaptable to a wide range of projects. Their cost-effectiveness, when compared to the enormous human and economic costs of road crashes, makes them an indispensable tool.

Moreover, the integration of RSAs into Vision 2030 objectives illustrates a comprehensive national strategy that unites public health, urban planning, economic development, and environmental sustainability under a common framework. The alignment of road safety policy with infrastructure investment priorities ensures that Saudi Arabia not only builds modern roads but also **safe, inclusive, and efficient transportation systems**.

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5-Euro Group's Experience in Road Safety Audits

Euro Group Engineering Consultancy has established itself as a leading expert in the field of Road Safety Audits (RSAs), providing comprehensive safety evaluation services across the Kingdom of Saudi Arabia. One of the flagship projects demonstrating their capabilities is the NEOM Trojena WER 50 Project, where Euro Group delivered a Stage 1 and Stage 2-Road Safety Audit covering the Preliminary and Detailed Design phases.

As part of the NEOM Trojena assignment, Euro Group—working in partnership with Seero Engineering Consulting—conducted a Concept Design Road Safety Audit for multiple site-wide and lake perimeter roads (WER 08 & 50). The audit process was carried out in alignment with international best practices, the Safe System Approach, and the integration of the iRAP methodology for indicative Star Rating evaluations.

The scope of services performed by Euro Group included:

- Identifying potential safety hazards affecting all road users, including motorists, pedestrians, cyclists, and micro-mobility users.
- Reviewing geometric design features for high-risk locations such as steep gradients (up to 12%), tight horizontal curves, and tunnel approaches.
- Recommending mitigation strategies such as appropriate vehicle restraint systems (VRS), traffic calming measures, and non-motorized user segregation.
- Ensuring compliance with national and international road design standards, including Saudi Highway Design Manuals.
- Applying iRAP demonstrators to estimate star ratings, achieving a minimum of 3-stars for vehicles and 4-stars for pedestrians and cyclists on audited road sections.

Euro Group's structured approach ensured that recommendations were not only technically sound but also economically viable and aligned with Vision 2030 objectives for safer, smarter, and more sustainable transportation infrastructure.

By successfully delivering this RSA in one of the most complex and high-profile developments in the Kingdom, Euro Group has reaffirmed its position as a trusted partner in road safety engineering—capable of handling large-scale, multidisciplinary projects in challenging environments.

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Jill is a Chartered Civil Engineer with the UK Engineering Council and a registered MME Grade A Engineer. Jill is a full Member of the Chartered Institution of Highways & Transportation and Member of Society of Road Safety Auditors. Jill has previously worked in the UK for National Highways, local authorities and private design consultants, international experience includes Ashghal in Qatar and Neom in KSA. She has extensive experience in road safety engineering, studies & road safety audits, highway design, asset, management and policy making. She is a proven people manager and has managed large teams of technical professionals and engineers. She has conducted over 800 road safety audits as well as non-motorised user audits. Working with Euro Group she managed a large team of road safety engineers responsible for the design, delivery and implemenation of school zones, rural road safety and pedestrian safety schemes with some involvement with the Expressway Program of works.

Jill is an experience mentor and coach and has trained engineers to become competent and qualified road safety auditors and road safety engineers. Jill is regularly instructed to act as Expert Witness for the UK legal profession and has written and has presented papers on behalf of the CHIT