

ROAD SAFETY ACTION INTERNATIONAL (RSAI)

ENGINEERING SOCIETY OF LIBERIA ANNUAL CONFERENCE



“IMPROVING ROAD INFRASTRUCTURE SAFETY USING A STAR RATING APPROACH”

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INTRODUCTION (BACKGROUND)

01

- Road networks influence users' behavior and perceptions that can significantly lead safe travel or road accidents.
- The safe system approach, which addresses human error through road design, is a key strategy for reducing road accidents.
- The Star Rating is one of the tools of the safe system approach for enhancement of road infrastructure safety,
- It is recommended by the UN, The World Bank, and other multilateral development institutions for road safety audit.



INTRODUCTION (BACKGROUND)

02

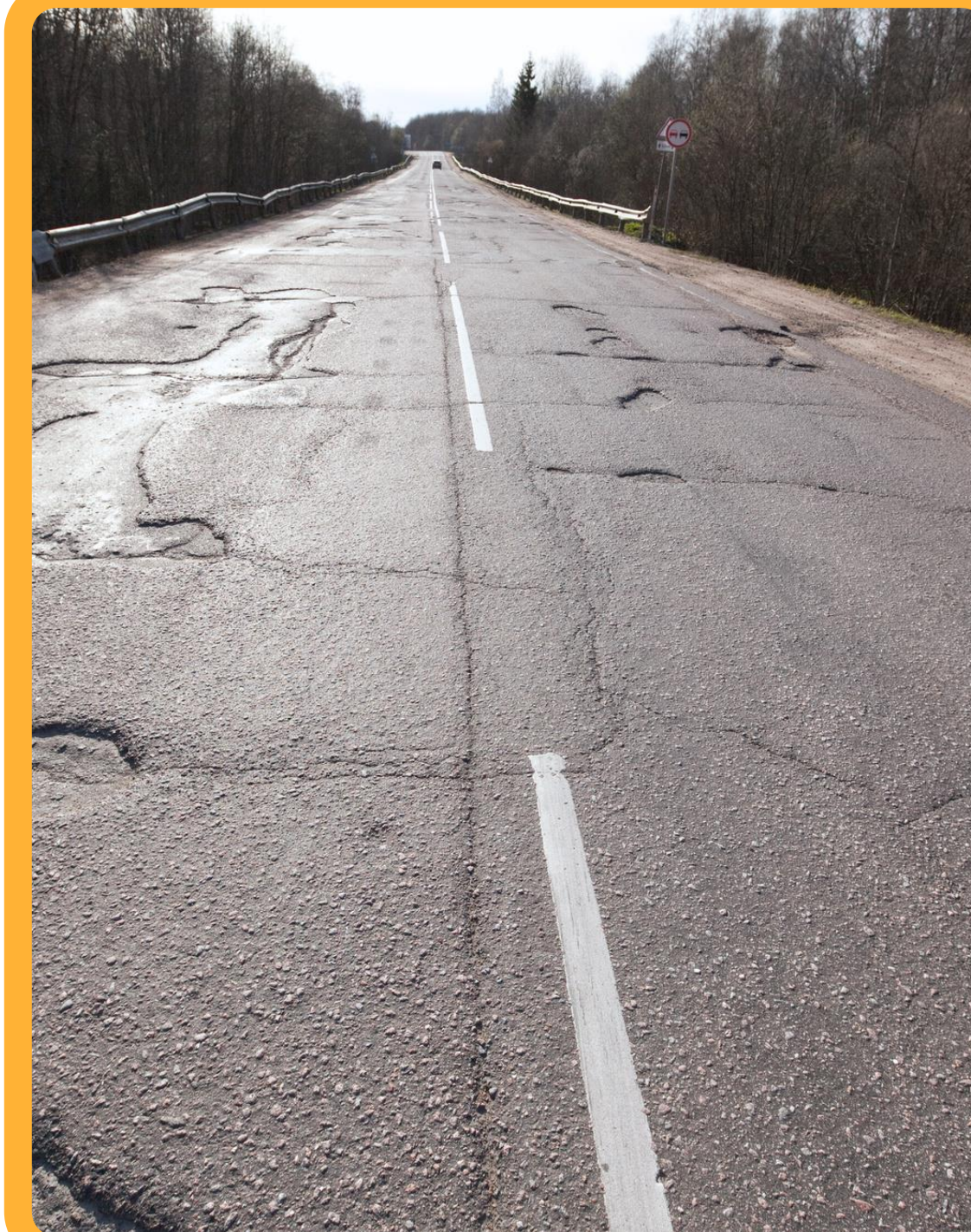
The Background of the Star Rating Approach:

- Star Rating is based on road inspection data
- The objective is to measure the level of risk to all road users on the road network
- 5-star road segments are the safest, while 1-star are the least safe
- Star Ratings can be undertaken on all roads around the world, in urban and rural areas and without reference to detailed crash data.

INTRODUCTION (PROBLEM)

03

- Road fatalities and injuries have increased in Liberia due to factors such as the rise in road connectivity resulting from rapid the urbanization over the past decade.
- The prolonged Liberian Civil War and lack of maintenance have led to deteriorated roads that reduced our network safety.
- The lack of detailed record-keeping for road accidents on Tubman Boulevard.



INTRODUCTION (OBJECTIVE)

04

The objective of this research is to gain a full understanding of the risk levels posed to vehicle occupants, motorcyclists, bicyclists, and pedestrians on the SBD Boulevard Intersection to ELWA Intersection.

This assessment aims to provide effective countermeasures that will ultimately enhance road infrastructure safety.



METHODOLOGY

05



Road Survey

The road survey entails gathering a range of road attributes essential for coding in the software.



Road Coding

Prepare road attributes that are collected to meet the system requirements for analysis, a process known as coding.



Data Preparation

Data preparation involves cleanings and imputing data for processing in VIDA.



Data Processing

converting raw data into a more usable format and performing various operations such as analyzing.



Star Rating

This rating indicates the safety level of the road network for users

DATA COLLECTION

The data collection was done using two approaches:

- physical infrastructure survey
- desk review of road safety and traffic management reports. These parameters were considered:



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DATA COLLECTION

A simple camera were used to take a photo of the section under review



Undivided road

Distance to roadside hazard ≥ 1 m

Straight or gently curving

Adequate Skid Resistance

Good Pavement Condition

Adequate side walk

ANALYSIS AND FINDINGS

08

The research findings have revealed crucial information that has greatly contributed to the poor condition of our road infrastructure safety, particularly at the SKD Boulevard Intersection to the ELWA Intersection.

The star ratings for the corridor were determined for each road user, and the results were as follows:

- Vehicle occupants - 2 Star Rating
- Pedestrians - 1 Star Rating
- Motorcyclists - 2 Star Rating
- Bicyclists - 1 Star Rating



VEHICLE OCCUPANTS

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The vehicle occupants' star rating on the study corridor is 2 stars. Factors leading to the 2-star of the study corridor include:

- the closeness of roadside hazards to the corridor
- Inadequate road marking
- lack of traffic signalize at the intersection
- no speed-claiming measure
- undivided road with no center line



MOTORCYCLISTS

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The 2-star rating suggests that accidents are **LIKELY** to occur at any time, and the impact of such accidents will be **SEVERED**. These are the factors contributing to this rating:

- no motorcycle lanes
- undivided road
- lack of speed control measures
- inadequate road markings
- absence of traffic signals at the intersection
- the closeness of roadside hazards to the road



BICYCLISTS

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A 1-star rating for bicycle safety shows that bicyclists are **VERY LIKELY** to be involved in road accidents that could potentially result in fatalities or serious injuries. The factors contributing to the 1-star rating include:

- no bicycle path,
- unrecognised shoulders,
- ineffective lighting for night-time riders,
- inadequate road markings,
- absence of traffic signals.
- lack of safe crossing



PEDESTRIANS

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The findings show a 1-star rating for pedestrians and these are the contributing factors for such result:

- absence of key pedestrian safety facilities such as pedestrian crossings
- the presence of utility poles, and sidewalk vendors on pedestrians sidewalks
- inadequate road signs at intersections.
- the absence of speed claiming measure to reduce motorists speed while approaching pedestrians



CONCLUSION

This research focuses on the safety of road users on the SKD Boulevard intersection to the ELWA intersection corridor in Liberia. It highlights the lack of detailed crash data in the country and aims to assess the level of risk faced by road users.

- The findings reveal that the safety of pedestrians, motorcyclists, and bicyclists who are the most vulnerable needs urgent attention from stakeholders and decision-makers in the transport sector.
- The safety of vehicle occupants is also important and should not be overlooked by policymakers.

Overall, road safety in developing countries like Liberia is a significant challenge, but improving road infrastructure is the most recommended solution. The research suggests for following recommendations:

- **General Recommendation:**

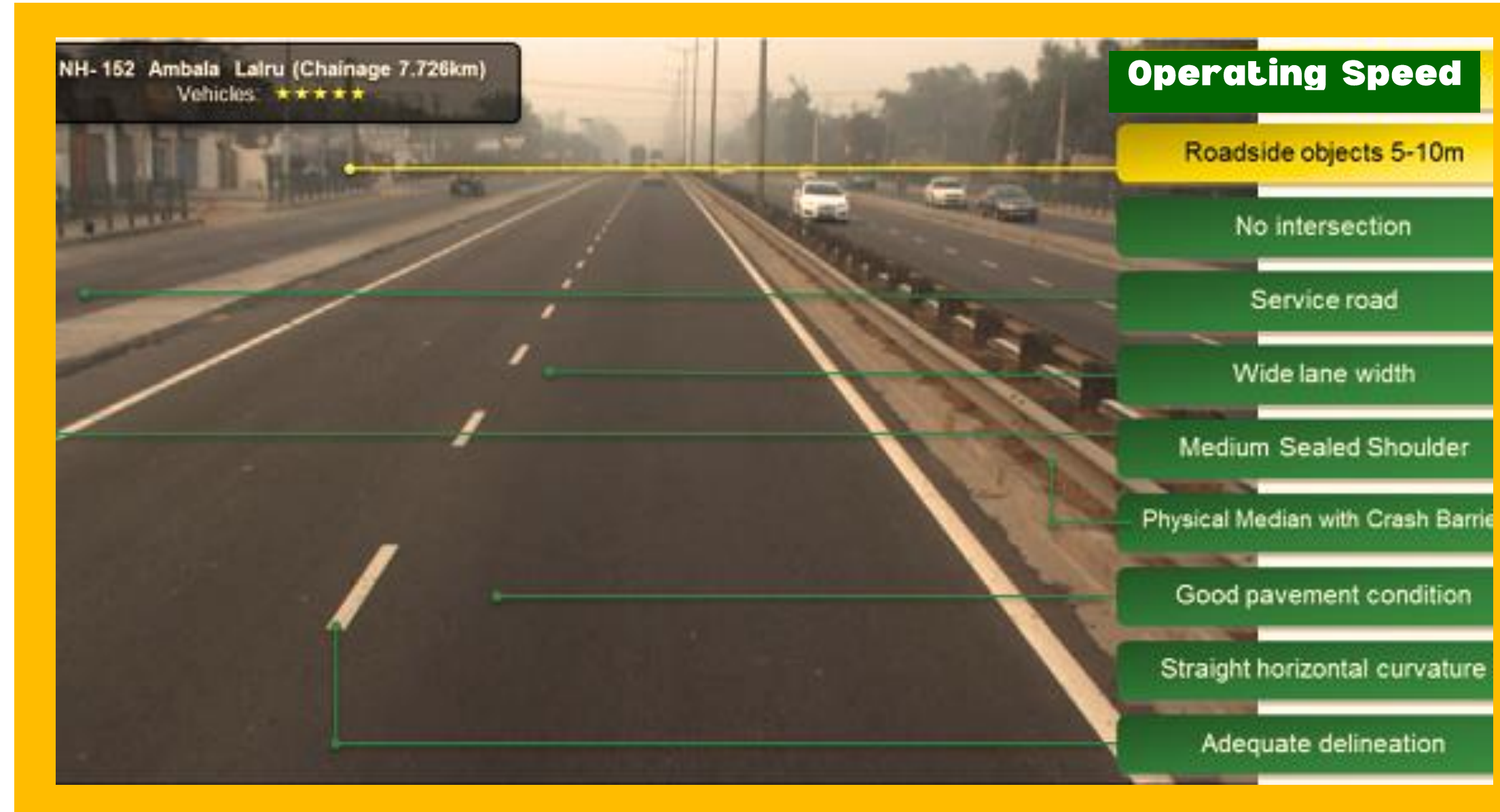
implementing a star rating system for all major road networks in Liberia to better understand the risks associated with these corridors and ,make informed decision.

SPECIFIC RECOMMENDATION (VEHICLE OCCUPANTS)

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To enhance the safety rating of the study corridor from a 2-star to a 3-star or higher, the following measures can be implemented:

- Removal or relocation of road hazards
- install speed humps or raised crossing platforms
- Improve street lighting
- Install signalized crossing points at intersections
- Implement lane dividers at midblock to avert head-on collisions
- Implement of clear and prominent road markings



SPECIFIC RECOMMENDATION (BICYCLES)

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The following measures are recommended for improving a 1-star rating for bicyclists to 3 stars or higher:

- Implement clear and prominent road markings
- Establish separate lanes
- Install speed humps or raised crossing platforms
- Install signalized crossing points at intersections
- Improve street lighting



SPECIFIC RECOMMENDATION (MOTORCYCLE)

17

The following measures are recommended for improving a 1-star rating for bicyclists to 3 stars or higher:

- Provide clear sight distance
- Implement clear and prominent road markings
- Dedicate separated motorcycle lane
- Install speed humps or raised crossing platforms
- Improve street lighting
- remove road side hazards



SPECIFIC RECOMMENDATION (PEDESTRIANS)

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The following measures are recommended for improving a 1-star rating for pedestrians to 3 stars or higher:

- Remove objects from the sidewalk
- Raise pedestrians crossing
- Improve road marking
- Install signalized crossing points at intersections
- Improve street lighting





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THANK YOU