Good Practice Factsheet 2018

SAFER AFRICA
African-European Dialogue Platform on Road Safety

Overcoming the barrier effect of major roads
Pedestrian overpasses/underpasses

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 724029

Background

Half of all road traffic deaths in the African region occur among vulnerable road users (pedestrians, cyclists and motorcyclists).

The African region has the highest proportion of deaths among pedestrians at 39%, when the average around the world is around 22%.

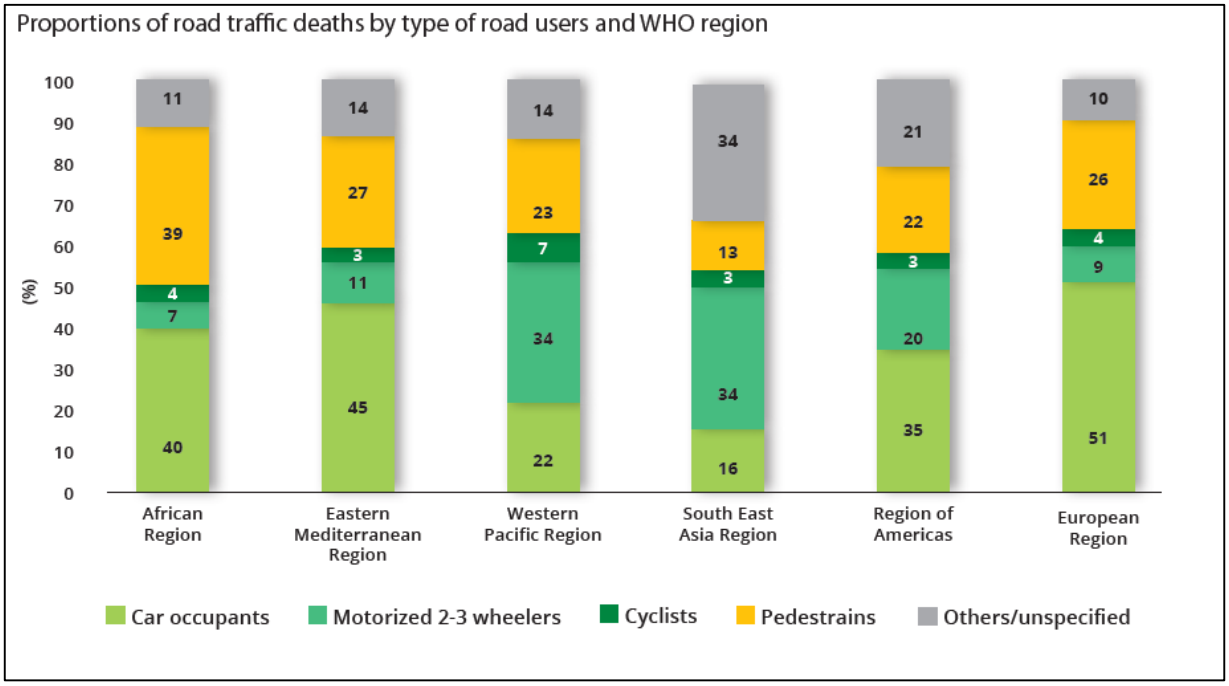
The proportion of deaths for pedestrians is similar for both low-income and middle-income counties in the African region, at 39% and 40% respectively.

Pedestrians accounted for 55% of road traffic deaths in Mozambique between 1993 and 2000.

In Kenya, the percentage for pedestrian and passenger crashes was 80% in 1990.

In Ghana, pedestrians represented 46% of road traffic deaths between 1994 and 1998.

In Tanzania and Cote d' Ivore it is estimated that pedestrians accounted for 39% and 75% of traffic-related fatalities respectively.



Many of these accidents involving pedestrians are due to the unsafe conditions when trying to cross a busy street or a high speed road. In many low- and middle- income countries there is a serious lack of infrastructure dedicated to protecting pedestrians in mixed land use environments.

Safer roads for pedestrians

Road infrastructure is important for the economic development in many low- and middle- income countries. In many cases, the need to upgrade the road network takes valuable space away from other road users, such as pedestrians. In others, settlements flourish along inter-urban roads due to the opportunities they present. Often in these cases, there is lack of planning regarding the safety of pedestrians and other road users. It is necessary to address the problem of accidents near locations where residential and commercial areas meet with high speed inter-urban roads.

From a planning perspective, land use arrangements (e.g. limiting traffic types served by a road, segregating access to roads depending on land use categories, and limiting development spread to only one side of a road) may help prevent high speed and traffic volume roads from becoming barriers severing local communities longing to interact.

Building **pedestrian overpasses/underpasses** is one of the most effective engineering solutions to reducing pedestrian exposure to traffic when trying to cross a street dominated by vehicles.

Potential Interventions

- Overpasses/underpasses should be placed in locations where it they are more likely to be used by pedestrians. Ideally, they should follow a natural "desire line" where users do not perceive them as inconvenient when they travel. The level of use depends on convenience, security and walking distance compared with alternative crossing locations. Tall fences and other barriers may help channel pedestrians to the overpass/underpass, though they are not considered the best solution to guiding people to use them.

- Overpasses are most suitable when the topography allows for a structure without ramps or steps. Long winding ramps, stairs or elevators are perceived as inconvenient by most pedestrians. Stairs are especially unfriendly to the elderly or disabled people. Underpasses need to be designed in such a way as to feel open and accessible.

- Modelling the longitudinal profile, lowering the road height near overpasses and increasing road height nearby underpasses diminishes the pedestrian journey height gap and the effort to surpass it, easing regulation compliance and acceptance of recommended pathways.

- If ramps are used, they must be designed to accommodate pedestrians in wheel chairs.

- Underpasses can be affected by flooding and also become dirty quickly. Proper maintenance is essential.

- People avoid using underpasses if they feel unsafe close to them. Overpasses/underpasses should be well-lit and secure, to increase the feeling of security and encourage people to use them.

Impact evidence

Vehicle-pedestrian crashes were reduced by up to 91% within 100m from the structures in Tokyo, Japan when overpasses along with fencing were implemented across various locations.

Constructing an overpass in Kampala, Uganda in 2002 led to a drop in pedestrian deaths from 8 to 2, the number of seriously injured increased from 14 to 17 close to its location. The reason was that pedestrians were reluctant to use as users considered it untidy, poorly lit and difficult to access. This highlights the need to make good design choices and provide regular maintenance.

Synergies between infrastructure corrective measures and general education and communication campaigns reduce the danger to adjoining communities, as shown in the intervention on the R300, a busy (70.000 AADT) 15 km dual carriageway road stretch near Cape Town implemented in he early years of this century. Pedestrian bridges (3) and road bridges (5) were refurbished; one new pedestrian bridge constructed along a major desired walking line; safety education campaigns were carried out in the affected local communities. In the period between 2002 and 2007 pedestrian fatalities reached 67, and serious injuries totaled 81 persons; from 2010 to 2013 only 8 killed pedestrians and 25 seriously injured were registered.

References

1. Road Safety in the African Region (WHO, 2015) https://afro.who.int/sites/default/files/2017-06/Road_Safety_AFRO_for_web_0.pdf
2. Pedestrian Safety: A road safety manual for decision-makers and practitioners (WHO, 2013) https://www.who.int/roadsafety/projects/manuals/pedestrian/en/ +
3. Retting R, Ferguson S, McCartt A. A review of evidence-based traffic engineering measures designed to reduce pedestrian–motor vehicle crashes. *American Journal of Public Health,* 2003, 93: 1456–1463.
4. Mutto M, Kobusingye OC, Lett RR. The effect of an overpass on pedestrian injuries on a major highway in Kampala – Uganda. *African Health Sciences*, 2002, 2: 89–93.
5. Greg Chen (2010). Road traffic safety in African countries – status, trend, contributing factors, countermeasures and challenges. *International Journal of Injury Control and Safety Promotion*, 17:4, pp. 247-255.
6. W. Odero, P. Garner, A. Zwi Road traffic injuries in developing countries: a comprehensive review of epidemiological studies. *Trop. Med. Int. Health*, 2 (5) (1997), pp. 445-460.
7. Design Criteria for Footbridges. Highway Structures: Design (Substructures) Material, Volume 2, Section 2 Part 8. BD29/17. Highways England, Transport Scotland, Welsh Government, Dept. for Infrastructure Northern Ireland.
8. Cardoso, J.L., Meta, E., Quigley, C., Welsh, R., Talbot, R. Analysis of Good Practices in Europe and Africa. SaferAfrica

CONSORTIUM

Coordinator

Centro di Ricerca per il Trasporto e la Logistica
Sapienza Università di Roma

Prof. Luca Persia luca.persia@uniroma1.it

Antonino Tripodi antonino.tripodi@uniroma1.it

Solidarité Internationale sur les Transports et la Recherche en Afrique Sub-Saharienne

SAFER Vehicle and Traffic Safety Centre at Chalmers

CITA

Handicap International

C$anté International

APRE Agenzia per la Promozione della Ricerca Europea

Ecole Nationale Supérieure des Travaux Publics

LNEC Laboratório Nacional de Engenharia Civil

Loughborough University

swov

BRSI

IFSTTAR

International Road Federation
Fédération Routière Internationale
Federación Internacional de Carreteras

CORRIDOR

GOOD PRACTICE FACT SHEET 2018

- Pedestrians
- Mopeds & motorcycles
- Safer road infrastructure for all road users
- Interurban through roads
- Public transport
- Safety campaigns
- Driver training and licensing
- Strengthened partnership and collaboration for road safety

www.saferafrica.eu

Follow us on