

Safety for vulnerable road users - new perspectives and new accident registration tools

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Abstract

Traditionally, traffic safety for VRUs have looked at motorized traffic as the dominating risk factor, and safety measures have been targeted to reduce the risks posed by motor traffic. According to official traffic accident statistics, the safety work has succeeded in many cities, reducing the numbers of killed and injured VRUs.

However, the majority of VRU accidents are not registered by the police and hence not included in the official statistics. These are typically single accidents, and the successful policy of increasing cycling and walking in the cities has the downside that these accidents increase. But since they are single accidents they are not reported to the police. Hence, they don't show up in the official statistics. Thus, there is an increasing mismatch between what official data show and what the true accident problem is for VRUs.

The problem of underreporting of VRU accidents is increasing, and the risk factors influencing most VRU accidents (single accidents) are neglected. The recent increase of e-scooters, and e-scooter accidents in our cities adds importantly to this picture, underlying the need for of changing both the focus and the data basis for safety efforts for vulnerable road users (VRUs) in our cities.

To deal with this challenge we have designed a new registration tool that is being used in emergency wards and emergency hospital departments in Agder county in Norway. Registrations started on the 1st of June 2022 and will proceed to the end of September 2023. The tool is a digital questionnaire with google maps and street view functions providing detailed information about the location of the accidents, allowing for black spot treatments.

Keywords

Vulnerable road users; accident underreporting; registration tool; localization of accidents, street view.

Introduction

Traditionally, traffic safety for VRUs (bicyclists and pedestrians) have looked at motorized traffic as the dominating risk factor, and safety measures have been targeted to reduce the risks posed by motor traffic. According to official traffic accident statistics, the safety work has succeeded in many cities, reducing the numbers of killed and injured VRUs.

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The problem with single accidents not being reported and included in the official statistics, has been recognized by several scholars in the traffic safety field, and the typical risk factors/accident mechanisms are slippery surfaces due snow/ice/gravel, tramlines, kerb stones, potholes and uneven pavement (Eriksson & Niska, 2021; Gerber et al., 2021; Gildea et al., 2021; Leune et al., 2021; Maempel et al., 2018; Olesen et al., 2021; Puzio et al., 2020; Schepers et al., 2015; Schepers et al., 2020; Schepers et al., 2017).

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Method

Traditionally, road accidents statistics are based on police reports. However, since single accidents are normally not reported to the police, they are not included in the statistics. Thus, there is a need for better registrations of VRU accidents. Registration at hospitals and emergency wards is a good option, and has been conducted many places, but they seldom include detailed information about localization.

In a recently launched project “**REcording CYclist Crashes and Long-term Injury consequences by new Smart Tools**” (**ReCyCLIST**) we have developed a new registration tool that is currently being used in emergency wards and emergency hospital departments in Agder county in Norway to register accidents with bicycles, scooters and other micro mobility devices. Patients coming for treatment after such accidents, are asked to participate, and they can do so by simply scanning a QR code during the stay. Normally patients must wait quite a long time at the emergency room to receive diagnosis and treatment, and they therefore have time to fill in a questionnaire about the accident while they are at the emergency room. They are also asked about their health condition immediately before the accident. This information will serve as a baseline to compare health conditions after three, six and twelve months.

If they cannot answer the questionnaire themselves at the emergency room, they are either assisted by health personnel (iPad), or they are asked if it is okay that they are contacted later by health personnel. If they agree, they receive a link to the questionnaire by SMS or email after a few days.

The questionnaire includes questions about the accident together with a google maps function, including street view, enabling the patient to localize the exact accident spot. The information will be utilized to investigate whether there are specific accident-prone spots (“black spots”) and/or typical accident mechanisms, in order to identify and implement adequate safety measures. We also use ordinary surveys to cyclists in the region and the municipalities’ “report services” to guide us in the selection of relevant spots (or types of spots) and problems for implementing preventive measures.

Registrations with the new tool started at three hospitals and three emergency wards in Agder county on the 1st of June 2022, and registrations will continue throughout September 2023.

Preliminary results

By the 15th of September, i.e. after 3.5 months, approximately 230 accidents have been registered, the majority being ordinary bicycle accidents (51 %) followed by e-bike accidents (21 %) and scooter accidents (16 %). Most victims are male (61 %), but in normal road traffic, female victims constitute the majority. The reason why males dominate in the total picture is that they have many more off-road accidents than females.

The preliminary results follow the pattern shown in other hospital-based registrations; single accidents constitute the vast majority (82 %). 10 % of accidents are collisions, and 8 % are due to “close calls” because of another road user (e.g. heavy braking). Most counterparts in collisions and close calls are other cyclists (52 %), followed by cars (25 %).

The accident mechanism or risk factor in the single accidents are loss of balance due to skidding (26%), loss of balance for other reasons (23 %), and hitting objects in the road (stone 14 %; kerb 10 %; potholes/uneven pavement 13 %). More than 90 % of respondents have used the map to indicate where the accident happened; 37 % have used the street view function.

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