iCSC international Cycling Safety Conference

6th Annual International Cycling Safety Conference
21-22 September 2017, Davis, California, USA

Road Safety Audit experiences related to cycling infrastructure

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Keywords: road safety audit, cycling infrastructure, traffic safety.

1 INTRODUCTION

Road safety has improved significantly in Hungary between 2007 and 2013.The number of road fatalities had dropped to levels seen 50 years earlier. In the past few years, however, it has started to increase again. Compared to 2013, safety levels deteriorated for almost all road user groups in 2014. Cyclist fatalities increased by 44%, accounting for 16% of all road fatalities in Hungary [1]. Unfortunately, the safety of cyclists is not in the focus of road safety related research activities in Hungary, nevertheless, Road Safety Audits (RSA) are now used more often for cycling infrastructure projects.

A Road Safety Audit; one of the four pillars of road infrastructure safety management, focuses on the identification of safety deficits in road infrastructure projects by performing an independent, detailed, systematic and technical check. RSAs are compulsory elements of certain road infrastructure projects as described in Directive 2008/96/EC of the European Parliament and of the Council [2]. Hungarian regulations extend their scope to further infrastructure elements. Cycling infrastructure, however, is not part of this scope unless it is part of, or in connection with, the project to be audited.

Auditing cycling infrastructure projects have recently become more common as a prerequisite for EU-funded projects. Under the Széchenyi 2020 (2014-2020) framework, the Regional and Urban Development Programme (TOP in Hungarian) offers several possibilities for cities to apply for infrastructure related development projects under themes such as economic development and mobility of workers, or transport development of sustainable cities. Cycling infrastructure elements of these projects are usually piggybacked on the core project theme which can be anything from road network development to the construction of a P+R parking garage. The recently made RSAs in the country have included not only rural but also urban locations. As a result, a number of typical cycling safety deficits have been collected and are presented in this paper.

2 TYPICAL SAFETY DEFICITS AND FINDINGS

Motorized vehicle-oriented transport planning is still one of the greatest barriers in sustainable transport network developments [3]. Sharing the road often means sharing the sidewalks between pedestrians and cyclists rather than sharing the roadway between cyclists and motorists.

2.1 Two-way bicycle path

In the recent years, the most common bicycle infrastructure type in audited designs has been a two-way bicycle path on one side of the road, mostly shared with pedestrians (Figure 1). From a safety point of view it has turned out to be an undesirable solution since it creates conflicts between the two most sustainable transport modes. In some cases, this type of design lacks crossing facilities and requires unnecessary bypasses from cyclists. This two-way on one side bicycle path should not be applied in densely populated residential areas, however they are more suitable outside built up areas.

2.2 Chevron markings

Bicycle chevron markings are applied too frequently and often unnecessarily, even in residential streets with very low traffic volumes (Figure 2). One of the reasons behind this is that these are low-cost measures which can be applied on longer sections, hence receive financial support from EU-funded programs.

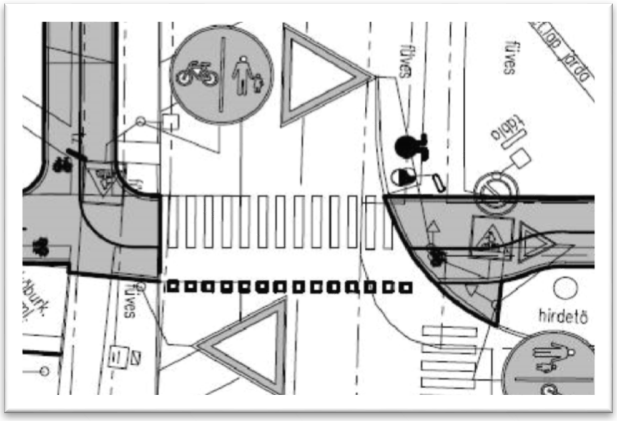

Figure 1: Two-way bicycle path shared with pedestrians

Figure 2: Bicycle chevron markings

2.3 Bicycle lanes

Bicycle lanes maintain a better level of visibility of the cyclist and reduce the likelihood of vehicle/bicycle accidents at minor road crossings. Bicycle paths tend to allow for right turn hook accidents and other issues concerned with loss of visibility. Bicycle lanes are rarely applied in Hungarian cities (except Budapest), although they offer much more direct accessibility for cyclists at road crossings.

2.4 Railway crossings

Railway crossings are crucial points in the rail and road network. Cyclist traffic at existing urban railway crossings were also the focus of road safety inspections in the last years [4]. While motorist traffic was controlled by flashing lights and barriers in most of the cases, cyclist infrastructure and control varied over a wide range. One of the typical problems was by-passing the labyrinth fence (Figure 3). Another was waiting between the tracks and the barrier. A third problem is shown on figure 4, where cyclists ride in the opposite direction on a one-way bicycle path. Control devices are provided only for cyclists riding in the correct direction and so violators (both cyclists and pedestrians) cannot see the flashing red signal. Based on the experiences with separated bicycle paths, separated barriers are recommended at railway crossings.

Figure 3: Cyclist is by-passing the labyrinth fence

Figure 4: Cyclists usually ride in the opposite direction

2.5 Inhomogeneous network

In the audited projects, the type of bicycle infrastructure changes often within short distances due to occasional availability of funds for construction and the lack of a well-established bicycle traffic strategy for the city. Consequently, the bicycle network often becomes a mixture of types and designs. From a road safety point of view, transition areas often create conflict situations among road users.

3 CONCLUSIONS

Using Road Safety Audits, this paper investigates the most common road safety deficits of bicycle infrastructure designs occurring recently in Hungary. Bicycle infrastructure has developed rapidly in the last 20 years in the country, however, certain safety concerns have been identified by means of RSAs. Despite these safety issues, it has to be acknowledged that cycling is widely supported by city governments and used as a daily transport mode.

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