Available online at www.sciencedirect.com
SCIENCE DIRECT®
Safety Science 43 (2005) 835–843
SAFETY SCIENCE
www.elsevier.com/locate/ssci

The indirect involvement of buses in traffic accident processes

Thierry Brenac *, Nicolas Clabaux

Department of Accident Mechanism Analysis, National Institute for Transport and Safety Research (INRETS), Chemin de la Croix Blanche, 13300 Salon de Provence, France

Received 2 February 2005; received in revised form 8 April 2005; accepted 17 April 2005

Abstract

The involvement of buses in accidents usually is assessed implicitly on the basis of the direct involvement of the bus in the collision or in injury production. This paper deals with the scope and forms of indirect involvement of buses (as a sight obstruction, for example). Accidents were selected by identifying the presence of the term 'bus' or synonyms in the text parts of complete police reports (testimonies, statements by the persons involved, etc.) available in electronic form, then analysed in detail. Direct or indirect involvement of a bus is found in 3.6% of traffic injury accidents reported by the police in the community studied (direct involvement: 1.4%; indirect involvement: 2.2%). The different forms of indirect involvement are then described, and some possibilities of preventive measures are discussed.

Keywords: Bus; Public transport; Road safety; Traffic accident; Accident involvement

1. Introduction

Research published on bus accidents is not very abundant (af Wåhlberg, 2004), no doubt because it is generally accepted that public transports help to improve road safety by reducing automobile traffic. Allsop and Turner (1986) for example showed that, in the case of Greater London, the decrease in the use of public transport linked to the sharp fare

* Corresponding author. Tel.: +33 4 90539522; fax: +33 4 90536894.
E-mail address: thierry.brenac@inrets.fr (T. Brenac).

0925-7535/$ - see front matter © 2005 Elsevier Ltd. All rights reserved.
doi:10.1016/j.ssci.2005.04.003

increases of 1982 led to an increase in the number of road traffic injuries. But public transport can also pose safety problems, notably trams (Cameron et al., 2001; Hedelin et al., 2002).

Concerning buses, as pointed out by White et al. (1995), 'It can be argued that bus and coach accidents are a very minor problem'. In France, according to national accident statistics (ONISR, 2004), accidents involving a bus or coach account for 1.5% of all personal injury traffic accidents, and cause 1.6% of traffic deaths and 1.8% of traffic injuries. Bus or coach occupants account for 0.7% of the personal injury traffic accident victims, according to the same sources (ONISR, 2004).

Some research suggests, however, that buses may be indirectly involved in a larger number of accidents. Unger et al. (2002) showed that 30% of children injured near bus or tram stops are children who cross in front of or behind the bus or tram and are hit by other vehicles. It seems that these accidents are rarely considered as involving buses in the police or hospital statistics or in the data gathered by the bus companies. This might explain why the studies on bus accidents that are based on such data (or select the cases they study using such data) do not bring this type of problem to the fore (Hamed et al., 1998; Vayre, 2001; af Wåhlberg, 2002, 2004).

By a bus's indirect involvement, we mean that the bus played a role in the process leading to a collision (as a sight obstruction, for example), even though the bus did not participate in the collision and no one in the bus was injured. Direct involvement corresponds to cases in which the bus is involved in the collision itself, or, if there is no collision, cases in which passengers are injured inside the bus (a fall in the bus caused by sudden braking, for example). We should point out that the involvement of a bus, whether direct or indirect, in no way implies that the driver or the bus company should be considered responsible for the accident. But an understanding of the accident cases indirectly involving buses is important from a prevention point of view: for example, the safety problems faced by pedestrians crossing in front of or behind buses can be reduced through measures affecting the design and location of bus stops (CERTU, 1995; Zegeer, 1993).

This paper presents an investigation aimed at estimating the extent of the indirect involvement of buses in personal injury accident processes and describing the different forms that this indirect involvement takes in the territory of an urban municipality in the suburbs near Paris. We have restricted ourselves to studying the indirect involvement of public transport vehicles (buses or coaches), without dealing with the question of the indirect influence of public bus transport system infrastructures (bus lanes, for example).

2. Method and data

In France, road traffic injury accidents give rise to police reports.[1] Some information is extracted from these police reports to constitute computerised records which form the national file of road traffic injury accidents. These computerised records (some sixty variables per accident) provide information on the circumstances of the accident, characteristics of

[1] An accident occurring on a road open to the public, involving at least one moving vehicle, and causing at least one injury that needs medical care, is considered as a road traffic injury accident by the French police.