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Trucks and Bikes: Sharing the Roads

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Abstract

More cycling in urban areas could alleviate congestion that would benefit logistics operations as well as provide health and environmental benefits to the community at large. However, cycling within many Australian cities is currently being impeded due to poor road design and the absence of best practice freight vehicle standards (amongst other deterrents). Rising levels of fear and road trauma are creating the opportunity to address safety issues associated with the interaction between trucks and bicycles in urban areas. Those involved in city logistics can help to promote cycling and other forms of active transport by participating in the development and implementation of measures that increase the level of safety for cyclists. Measures that could be supported include: intersection design, design modifications for trucks, education of drivers, cyclists and road managers, enforcement aimed at behavioural change, as well as logistics customers requiring the use of safer trucks. Road management approaches with integrated safety benefits include designating routes and times for the movement of freight vehicles to avoid cyclists and requiring the trucks used in urban areas to have better visibility (e.g. lower driver position). This paper discusses several measures for improving the safety of cyclists including freight vehicle engineering and truck driver training programs as well as environmental management and land use changes.

Keywords: Road safety; traffic management; cycling; truck crashes

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1. Introduction

The logistics industry is very diverse and its on-road presence ranges from the bicycle courier to the mega truck. City life has become absolutely dependent on these heterogeneous participants in logistics. This paper is concerned with logistics in Australian cities and is focused on larger trucks and the safety issues they can have mixing with cyclists who are part of the group of vulnerable road users (cyclists, pedestrians and motorized open wheelers) experiencing increasing road trauma (WHO, 2013). Cyclists have problems being seen, being afforded rights under the rules of the road, understanding truck movements, and undertaking avoidance maneuvers. An outcome for cyclists of any of these system failures can be a initial knock down impact followed by run over crushing under the heavy trucks wheel(s) (Morgan, Dale, Lee and Edwards, 2010). Cyclists are particularly at risk as they cannot, like pedestrians, move sideways or backwards to avoid an expected encroachment on their space by a truck or trailer as can occur when a large (long) vehicle turns left (right in right hand side drive countries). Cyclists, like motorcyclists are also at risk at intersections when the through cyclist has right of way over turning trucks but may not be seen or may have their approach speed underestimated and/or their capacity to stop overestimated by a truck driver.

In Australian cities the car is the first choice for most personal travel and cars are the main cause of congestion that frustrates logistics operators and increases distribution costs. Many people own bicycles and could use them for short trips but limit their cycling because they fear motor traffic: the speeding cars, the erratic white vans and trucks (Johnson, 2011). Many cycling supportive measures have been used in Northern Europe to provide a safer and sustainable road system and to protect and maintain the health, environmental and economic benefits these populations enjoy from active travel (Pucher and Buehler, 2008). Measures include: innovations in engineering, like intersection designs and modifications to trucks; education of drivers, cyclists and road managers; enforcement aimed at behavioral change, and encouragement to use safer trucks (Mesken and Schoon, 2011). Significant improvements in safety outcomes for cyclists in interactions with trucks have been achieved in northern Europe and Japan by improved visibility and under-run protection. The transferability of such ideas to Melbourne (and other Australian cities) seems to face significant barriers including the invisible contexts: the local culture, political will, institutional inertia, and differences in legal systems.

2. Background

2.1 Context

In 2004 at the 3rd International Conference on City Logistics Taniguchi et al, suggested a vision based on three pillars (guiding principles): mobility, sustainability, and liveability. Supporting the three pillars were eight goals of: global competitiveness, efficiency, environmental friendliness, congestion alleviation, security, safety, energy conservation, and labour force. They saw promise in: establishing effective partnerships between key stakeholder groups; implementing information and communication technology and intelligent transport systems; promoting corporate responsibility; and incorporating urban freight transport as an integral component of urban planning (Taniguchi, Thompson and Yamada, 2004). As a development of that vision, this paper explores the potential for overlapping interests and mutual support in areas of promise between city cycling and urban freight.

In a 2009 study for the World Bank, Dablanc (2009) summarises the challenges for urban freight as being to both serve the urban economy and to contribute to city safety, health and liveability. Many freight issues are shared by cities, including: increased international flow of goods through ports, the dominance of road freight by motorized modes, “Logistics sprawl” (the suburbanization of warehouses) requiring more vehicle-kilometres, and the presence of small operators with old trucks and little training (Dablanc, 2009).

In a 2011 study Mesken et al found that municipalities, key players in city access and safety, tended to be involved with the transport industry to improve efficiency and reduce environmental problems (Mesken and Schoon, 2011) . Some measures, such as reduced emissions by less truck movements also have safety benefits. An approach with integrated safety benefits could include: designating freight times and routes to when and where there are a few cyclists, and requiring trucks to have better visibility (e.g. lower cabins).