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Is the three-foot bicycle passing law working in Baltimore, Maryland?

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A B S T R A C T

Maryland (MD) recently became one of fourteen states in the United States to enact a traffic law requiring motor vehicles to pass bicyclists at a distance of greater than three feet. To our knowledge, motorist compliance with the law has never been assessed. This study measured the distance between overtaking motor vehicles and cyclists [*e.g.* vehicle passing distance (VPD)], to develop baseline metrics for tracking implementation of the three-foot passing law in Baltimore, MD and to assess risk factors for dangerous passes. During September and October 2011, cyclists ($n = 5$) measured VPD using a previously published video technique (Parkin and Meyers, 2010). Cyclists logged a total of 10.8 h of video footage and 586 vehicle passes on 34 bicycle commuting trips. The average trip lasted 19.5 ± 4.9 min and cyclists were passed on average 17.2 ± 11.8 times per trip. VPDs of three feet or less were common when cycling in standard lanes (17%; 78 of 451 passes) and lanes with a shared lane marking (*e.g.* sharrows) (23%; 11 of 47 passes). No passes of three feet or less occurred in bicycle lanes (0 of 88 passes). A multiple linear regression model was created, which explained 26% of the variability in VPD. Significant model variables were lane width, bicycle infrastructure, cyclist identity, and street identity. Interventions, such as driver education, signage, enforcement, and bicycle infrastructure changes are needed to influence driving behavior in Baltimore to increase motorist compliance with the three-foot law.

1. Introduction

On October 1, 2010, a three-foot passing law took effect in Maryland (MD), United States (US) to protect bicyclists from motorists on roadways. Similar to laws in 13 other US states (Smith, 2009), the MD law requires motor vehicles to pass cyclists with a clearance of greater than three feet (Maryland General Assembly, 2010). Motorized vehicular traffic can be intimidating for cyclists and close passes are physically destabilizing. If a heavy vehicle traveling at 64 km/h (40 mph) passes a cyclist with a clearance of three feet, the cyclist is pushed by lateral forces of ~13 N (3 lbs force) (Khan and Bacchus, 1995), which may divert that cyclist from his or her course, increasing risk for a collision with traffic or parked vehicles. In addition to the physical effects, Parkin and colleagues found that cyclists perceive risks related to traffic volume, speed, and motor vehicle composition (Parkin et al., 2007). Creating space between vehicles and bicycles may be the reason why individuals prefer cycling in bicycle lanes over streets with no bicycle facilities (Kroll and Sommer, 1976; Stinson and Bhat, 2003) as a risk reduction strategy.

Cycling is not without risks; cyclists are 12 times more likely to be killed compared to motorists per kilometer traveled in the US (Pucher and Dijkstra, 2003). There are also health benefits of bicycle commuting from increased physical activity (Oja et al., 1998), and some research suggests greater net health benefits compared to risks (from traffic accidents and air pollution) among cyclists *versus* motorists (de Hartog et al., 2010; Rojas-Rueda et al., 2011). The public health benefits of commuting to work by bicycle extend beyond personal physical health. Commuting by bicycle is associated with improved psychological health (Ohta et al., 2007), and reduced communiting costs compared to commuting by car. One of the authors of this paper calculated an annual saving of $5,500 by not owning a car for daily commuting; a calculation that used current rates of automobile insurance in Baltimore, MD parking costs at the Johns Hopkins Medical Campus (JHM) and at the author's condominium, the cost of a low-end car amortized over ten years, and fuel and maintenance costs.

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