



Street racing among the Ontario adult population: Prevalence and association with collision risk



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ABSTRACT

Background: Street racing has been identified as a significant public health concern, yet, little is known about the prevalence of this behaviour and its impact on collision risk. The current study was designed to address this dearth of knowledge by estimating the prevalence of street racing among the Ontario, Canada adult population, and examining its association to collision risk, controlling for demographics and other risk factors.

Methods: Data were based on telephone interviews with 11,263 respondents derived from the 2009–2014 cycles of the CAMH Monitor, an ongoing cross-sectional survey of adults aged 18+ years. A hierarchical-entry binary logistic regression analysis of collision involvement in the previous 12 months was conducted and included measures of street racing, demographic characteristics (sex, age, marital status, education, income, region), driving exposure, and driving after use of alcohol and use of cannabis.

Results: The prevalence of street racing was 0.9%. Based on univariate analyses, street racing was more prevalent among males (1.30%; $p < .01$) and those aged 18–25 years (2.61%; $p < .001$). Controlling for demographic characteristics, driving exposure, and driving after use of alcohol and use of cannabis, self-reported street racing significantly increased the odds of a crash ($OR = 5.23$, $p < .001$).

Discussion: A small but significant percentage of adult drivers in Ontario reported engaging in street racing. Even after adjusting for demographics, driving exposure, and driving after use of alcohol and use of cannabis, street racers faced more than a five-fold increase in the odds of a crash. Program and policy options must be considered to target this contingent.

1. Introduction

Street racing has been identified as a significant public concern in Canada. A population-based telephone survey conducted by the Traffic Injury Research Foundation reported that 68.7% of Canadians identified street racing as very or extremely concerning, rating it third highest of all road safety issues listed after drink-driving and red light running (Vanlaar et al., 2008). The high profile of street racing in the minds of the Canadian public is likely related to its central role in popular culture and sensational coverage in the news media. Street racing has been idolized in films such as the *Fast and the Furious* series, and is easily found on video sharing Internet sites such as YouTube. A recent content analysis of major Canadian newspaper articles published between November 1, 2006 and October 31, 2008 identified 351 articles containing the term ‘street racing’ (Daigle et al., 2014). Of these, the majority focused on collisions, fatalities and street racing offences,

often highlighting sensational cases with tragic consequences.

Despite the notoriety of street racing in the public conscientiousness, very little empirical study has focused on measuring the threat to public safety posed by street racing. Contributing to this dearth of knowledge is the absence of separate codes for racing on police collision reporting forms in many jurisdictions, including Canada (Meirambayeva et al., 2014a; Vingilis and Smart, 2009). Although racing can often be identified as a contributing factor in the section of the form requesting a narrative description of the incident, witness testimony is typically required to designate the collision as having involved racing as opposed to speeding. Drivers are usually unwilling to provide this information, and passengers and bystanders are hesitant to serve as witnesses.

Speeding, in general, is very prevalent among drivers. A 2009 field survey assessing observed speeds on American freeways and interstates found that 71.7% of vehicles exceeded the posted speed limit, with

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20.1% exceeding the speed limit by more than 10 mph (Huey et al., 2012). A national telephone survey conducted by the AAA Foundation for Traffic Safety in 2015 found that 48.4% of drivers reported driving 15 mph over the speed limit on a freeway in the past month, and 1 in 4 identified it as acceptable to do so (AAA Foundation for Traffic Safety, 2016). In Canada, a 2006 national telephone survey found that 12% of drivers admitted to driving well over the speed limit, which corresponds to 2.67 million Canadians (Vanlaar et al., 2006). Analysis of crash data clearly indicates that speeding kills, contributing to increasing frequency and severity of motor vehicle collisions. In 2010, 32% of all fatal motor vehicle collisions in the United States were speed-related crashes, which resulted in \$52 billion in economic costs (Blincoe et al., 2015).

Estimates of the prevalence of street racing have typically come from social surveys, and have varied considerably for samples of young, male drivers, ranging from 18.8% among a sample of 18- to 21-year-old males in New Zealand (Fergusson et al., 2003) to 88.1% among a sample of 17- and 18-year-old males at a suburban high school in the United States (Arnett et al., 1997; Meirambayeva et al., 2014a). In a study of adolescents living in small to mid-sized towns in northwestern Italy, 38% of 14- to 17-year-old males reported racing against another vehicle at least once in the previous two months (Bina et al., 2006). In Queensland, Australia, Palk et al. (2011) found that 58% of a group of 16- to 24-year-old males reported engaging in drag racing during the previous year. Finally, in a survey of secondary school students in Ontario, Canada, 33.7% of grade 11 and 12 male students with an advanced-level or full driver's licence reported being involved in a street race in the previous year (Vingilis et al., 2011). The estimated prevalence of street racing among young, female drivers has always been much less than that estimated among young, male drivers.

Studies of older drivers suggest that the prevalence of street racing among this group is significantly less than that of younger drivers. A national Gallup poll of drivers in the United States aged 16 years and older found that 3% reported racing another driver in the past month (Royal, 2003). Similarly, preliminary analyses of population-level data from adults aged 18 years and older in Ontario, Canada revealed that 1% of respondents reported engaging in street racing in the past year (Smart et al., 2011, 2012).

The majority of the limited available literature has identified street racers as predominantly young males aged 16–24 years (Armstrong and Steinhart, 2006; Falconer and Kingham, 2007; Knight et al., 2004; Leigh, 1996; Palk et al., 2011; Smart et al., 2011; Vaaranen and Wieloch, 2002). These street racers are also typified by a history of involvement with other risky behaviours. Self-report surveys have found that street racers are more likely to report tobacco smoking, problems with alcohol, cannabis use, drink-driving behaviour, and involvement in antisocial or criminal activity than drivers not involved in street racing (Bina et al., 2006; Fergusson et al., 2003; Ibrahim et al., 2015; Smart et al., 2011; Vingilis et al., 2011). Street racers are also more likely to report poor mental health (Smart et al., 2012) and a history of externalizing behaviours (i.e., early onset conduct and attention problems) (Fergusson et al., 2003). Studies of crash data have indicated that drivers involved in a street racing-related collision are more likely to report previous driving violations and previous crashes (Knight et al., 2004; Leal and Watson, 2011; Leal et al., 2010; Li et al., 2008). Self-report data has also confirmed this relationship between street racer status and history of collision (Palk et al., 2011). The interrelated connection of risky behaviours among street racers is consistent with Problem Behaviour Theory (Jessor, 1987; Jessor et al., 1997), which posits that the syndrome of problem behaviours in adolescents contributes to a state of transition proneness that can be used “to specify the likelihood of developmental change, specifically, the onset or initial occurrence of age-graded, norm-departing, transition-marking behaviours” (Costa, undated). Given this association between street racing and other risky behaviours, any efforts to measure the association between street racing and driving outcomes

should adjust for other risky roadway behaviours.

While street racing contributes to a relatively small proportion of the total crashes and fatalities on our roads and highways, it represents an important road safety problem. Leal and Watson (2011) examined police records of illegal street racing and associated risky driving offences committed in Queensland, Australia between July 1, 2005 and September 30, 2006. Of the 848 offences recorded, 3.7% resulted in a crash. These were typically single-vehicle crashes where the driver attempted a stunt (e.g., drifting, burnouts) unsuccessfully, which resulted in leaving the road and colliding with a fixed object. Knight et al. (2004) analysed the National Highway Traffic Safety Administration's Fatality Analysis Reporting System (FARS) data for 1998–2001, and reported that 0.21% of fatal crashes involved street racing. These 315 crashes resulted in 399 fatalities. It was also found that fatal crashes involving street racing were more likely to occur on urban roadways and were nearly six times more likely to occur at speeds exceeding 65 mph. More recently, Manning (2008) reported that 804 persons were killed in racing-related crashes recorded in the FARS database between 2001 and 2006. From 2005 to 2006, a 35% increase in the number of fatal racing-related crashes was identified. For Canada, only local estimates of the impact of street racing on collisions and fatalities are available. In their review of the issue, Vingilis and Smart (2009) cited evidence from the Greater Toronto Area indicating that between 1999 and 2007, 38 people, or on average, five per year, died in street-racing related crashes. Vingilis and Smart further noted that the average number of traffic-related fatalities annually in Toronto for 2000–2004 was 77.6.

1.1. Purpose of the current study

We suspect that street racing contributes to only a small percentage of total motor vehicle crashes (Knight et al., 2004; Leal and Watson, 2011), but cumulatively, it contributes to the deaths of hundreds, if not thousands, of motorists worldwide each year. Moreover, it appears to be symptomatic of a more overarching risky behaviour syndrome (Jessor, 1984, 1987; Jessor et al., 1997) with potential implications for healthcare and the criminal justice system. Despite its high profile in the public consciousness (Daigle et al., 2014; Vanlaar et al., 2008), street racing has received little empirical attention, with only a handful of studies focused on understanding the prevalence and potential impact of the problem and on identifying the best strategies to discourage the behaviour (Vingilis and Smart, 2009). With so few studies dedicated to this public health issue, and potential subcultural differences across jurisdictions (Vingilis and Smart, 2009), it is imperative that road safety experts from around the globe initiate local research of street racing behaviour.

The current study represents a Canadian initiative to measure street racing in the adult population of its most populated province and to identify driving-related correlates of this behaviour. Smart et al. (2011) provided preliminary analyses of a population-level telephone survey of adults in Ontario, Canada for January 2009 to December 2010. Based on this small sample, the researchers estimated the prevalence of street racing to be 1%. The purpose of the current study was two-fold: (1) to update the estimated prevalence of street racing among the Ontario adult population based on a larger sample than that used by Smart et al. (2011), and; (2) to examine the association between street racing and collision risk, adjusting for relevant demographic and driving-related factors.

2. Methods

2.1. Sample

Data were based on telephone interviews with 11,263 respondents who reported having driven a vehicle in the past year. Data were derived from the 2009 to 2014 cycles of the Centre for Addiction and

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