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## Randomized trial of an official contact letter intended to increase proper licensure among unlicensed motorcycle owners

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### ABSTRACT

**Background:** Approximately one-third of all fatality-injured motorcycle operators in California from 1999 through 2008 were not properly licensed to ride a motorcycle at the time of the crash. In availing themselves of a licensing system, motorcyclists are afforded the opportunity to acquire and demonstrate the minimum knowledge and skills necessary to operate motorcycles on public roadways, and licensing allows agencies to monitor their riding performance and apply appropriate sanctions, with the overall goal being enhanced safety. To that end, a randomized trial was conducted of an intervention recommended by the National Highway Traffic Safety Administration to increase proper motorcycle licensure.

**Methods:** Official contact letters providing information about obtaining a motorcycle license, and the potential legal consequences of riding without one, were mailed to owners of currently-registered California motorcycles who were not licensed to ride motorcycles. Half of the 65,766 improperly licensed California motorcycle owners identified were randomly assigned to be mailed the contact letter while the remainder served as a no-letter control group. The groups were compared on 33-month post-treatment motorcycle licensure rates and 18-month post-treatment motorcycle crashes and traffic violations.

**Results:** While a modestly higher percentage of motorcycle owners who were mailed the contact letter became properly licensed (14.5%) than those who were not mailed the letter (10.4%), the majority (85.5%) remained improperly licensed to operate a motorcycle 33 months later. The effect of the contact letter was influenced by owner age, whereby the odds of licensure for those to whom the letter was sent increased significantly for owners aged 20–34 (21%), 35–54 (47%), and 55 and older (96%). No 18-month post-treatment differences in motorcycle crash involvements or traffic violations were found.

**Conclusion:** Given the traffic-safety neutral outcomes and relatively low cost of treatment, official contact letters should be considered in other jurisdictions to increase proper motorcycle licensure as recommended by the National Highway Traffic Safety Administration. Future letters may be more effective if they are tailored to the demographic characteristics (e.g., age and sex) of the owners.

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## 1. Introduction

Operating a two-wheeled motorcycle without a valid license is associated with an increased likelihood of being involved in a crash, a finding that has been demonstrated in Australia, New Zealand, Taiwan, Thailand, the United States, and other jurisdictions (Harrison, 1997; Hurt, Quillet, & Thom, 1981; Kraus et al., 1991; Lardelli-Claret et al., 2005; Lin & Kraus, 2009; McGwin et al., 2004; Reeder, Chalmers, & Langley, 1995; Sirathranont & Kasantikul, 2003; Watson & Steinhardt, 2006; Yeh, Chang, & Chang, 2008). Absolute estimates of the prevalence of improperly licensed motorcycle riding in the U.S. and other jurisdictions are difficult to establish; instead, crash involvements among such riders are typically used to infer the relative prevalence of unlicensed riding over time (Kraus et al., 1991; Reeder et al., 1995; Watson & Steinhardt, 2006; Yeh et al., 2008).

In the United States, the number of motorcycle riders involved in fatal crashes increased 114% from 1999 through 2008 (National Highway Traffic Safety Administration [NHTSA], 2011). Consistent with this national trend, the number of motorcycle riders in California involved in fatal crashes during this time period increased 137%. Approximately 27% of motorcycle riders nationwide and 34% of those in California who were involved in fatal crashes during this decade were not properly licensed to ride motorcycles at the time of the crash (NHTSA, 2011). For comparison purposes, among passenger vehicle drivers involved in fatal crashes during this time period, only 14% nationwide and 20% in California were improperly licensed when they crashed. Overall, the number of improperly licensed motorcyclists involved in fatal crashes increased 89% nationwide and 146% in California between 1999 and 2008.

In response to these trends, NHTSA entered into a cooperative agreement with the American Association of Motor Vehicle Administrators to develop and publish *Guidelines for Motorcycle Operator Licensing*, which contains recommended motorcycle safety interventions and strategies to increase proper licensure among motorcyclists (NHTSA, 2009). One such intervention recommended in these guidelines is for motor vehicle agencies to mail a contact letter to improperly licensed motorcycle owners encouraging them to complete the requisite training and obtain a motorcycle operator license (NHTSA, 2009). The rationale behind this recommendation is that in availing themselves of a licensing system, motorcyclists are afforded the opportunity to acquire and demonstrate the minimum knowledge and skills necessary to operate motorcycles on public roadways, and licensing allows agencies to monitor their riding performance and apply appropriate sanctions, with the overall goal being enhanced safety. This strategy also has the potential to increase proper licensure among motorcycle owners and perhaps reduce the prevalence of unlicensed riding for jurisdictions outside of the United States.

Approximately 13% of motorcycle owners in California are not properly licensed to operate their vehicle on public roadways. Riding without the proper license or permit is a violation of *California Vehicle Code* §12500, and those cited for this violation risk impoundment of their motorcycle as well incurring a fine exceeding \$1000. Similar to the procedure used in most U.S. states, individuals who wish to become properly licensed to ride a motorcycle on public roadways in California must submit a license application, pay a fee, and pass a visual acuity screening, a motorcycle operator knowledge test of rules of the road and safe driving practices, and a motorcycle skills test. The intent of this motorcycle rider licensing program is to increase rider competency by (1) motivating applications to acquire at least the minimum levels of knowledge and skill necessary to pass the required tests, and (2) screening out those who are unqualified to safely and knowledgeably ride a motorcycle on public roadways as demonstrated by their failure of the required vision, knowledge, and/or skills tests. Motorcycle licenses are issued by the California Department of Motor Vehicles (DMV), are usually valid for 5 years, and typically can be renewed by mail in 5-year increments by paying a fee to DMV.

The recommended use of contact letters to increase licensure among improperly licensed motorcycle owners was evaluated in a randomized trial in Maryland, a small state on the east coast of the U.S. (Braver et al., 2007). The results of the study indicated that 10.4% of those who were mailed the contact letter obtained a motorcycle license within 6 months after the mailing compared to 7.9% of those in the control group, and that the majority of owners remained improperly licensed to operate a motorcycle after 6 months. The short 6-month follow-up period used in the Braver et al. study may have underestimated the true impact of the contact letter intervention on licensing rates, particularly given that motorcycle learner permits in the state were valid for 6 months. In addition, the potential impact of the contact letter on subsequent motorcycle crashes or traffic violations was not evaluated as part of the study.

The current study replicates the randomized trial of Braver et al. (2007) by assessing the effect of using contact letters to increase proper motorcycle licensure among motorcycle owners, but builds upon their work by comparing the licensure rates of the groups after a longer follow-up time (33 months vs. 6 months). It is conceivable that bringing more owners into legal riding status may lead to an increase in motorcycle crash or traffic violations incidents by increasing operator exposure to motorcycle travel, unless any skills gained through the process of licensure counterbalanced the risk from greater exposure. To evaluate this possibility, the present investigation expands upon the Braver et al. study by also comparing the motorcycle crash and traffic violation incidents of the groups in addition to licensure rates.

## 2. Methods

### 2.1. Sample identification and assignment

Over 800,000 records for currently registered motorcycles were identified from the DMV registration database. Records were discarded if the motorcycles had more than one registered owner, were owned by military personnel or businesses

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