Approaches for Reducing Alcohol-Impaired Driving: Evidence-Based Legislation, Law Enforcement Strategies, Sanctions, and Alcohol-Control Policies

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ABSTRACT: Reducing impaired driving requires a systematic, consistent, and multifaceted approach. There is strong evidence on the effectiveness of both direct and indirect measures. The strategy that has the most immediate and largest impact has been highly publicized, visible, and frequent impaired-driving enforcement, especially deploying sobriety checkpoints or random breath testing. Lowering legal blood alcohol concentration (BAC) limits for driving to 0.05 g/dL or lower has also had a world-wide impact. Raising the legal drinking age has been successful in the US and other countries in reducing young impaired-driver fatal crashes. Graduated drivers' licensing for youth has also been effective by restricting conditions under which youth can drive. Sanctions that reduce impaired-driving recidivism include special driving-under-the-influence (DUI)/driving-while-intoxicated (DWI) courts, mandatory alcohol ignition interlocks, and consistent alcohol monitoring programs. Opportunities for further progress include better enforcement of the drinking age and refusing to serve obviously intoxicated patrons. Technology for detecting alcohol impairment and autonomous vehicles will also play an important role in future efforts to eliminate impaired driving.

KEYWORDS: Alcohol-impaired driving, blood alcohol concentration (BAC), minimum legal drinking age, random breath testing (RBT), sobriety checkpoints.

FOREWORD

This article presents an overview of evidence-based policies and programs designed to reduce highway crashes involving alcohol-impaired drivers. Scholars, researchers, or practitioners with an interest in this area should also consult the article by Voas [181], and a report published by the US National Highway Traffic Safety Administration (NHTSA) [70] on "Countermeasures That Work", which lists over 100 specific traffic-safety countermeasures with evidence of effectiveness, covering all areas of traffic-safety behavioral programs. The latest in the series of NHTSA Alcohol and Highway Safety reviews also presents evidence up through 2006 [187]. Other articles relevant to this review include "Effectiveness of Behavioral Highway Safety Countermeasures" [146], "Preventing Impaired Driving: Opportunities and Problems" [182], and "Programs and Policies Designed to Reduce Impaired Driving" [183].

This article uses the public health approach taken by Voas [183], which provides a good logical structure for understanding the characteristics and impacts of alternative approaches. Alcohol-impaired driving countermeasures that are proven effective or that have great potential are classified here under three headings: Primary Prevention, Secondary Prevention, and Tertiary Prevention. Primary Prevention countermeasures reduce high-risk drinking and high-risk driving directly, by limiting alcohol availability and reducing high-risk nighttime driving. Secondary

Prevention countermeasures are intended to deter alcohol-impaired driving by adopting and enforcing effective impaired-driving laws. Tertiary Prevention focuses on countermeasures directed at preventing recidivism by convicted impaired-driving offenders, and include license and vehicle actions, treatment and rehabilitation programs, and alcohol-monitoring programs. The research described in this article primarily concerns the US, although a few international approaches are considered.

INTRODUCTION

Impaired Driving: A Worldwide Problem

Alcohol-impaired driving has been recognized as a problem almost as long as automobiles have existed [36]. Worldwide, it is estimated that alcohol-impaired driving crashes account for anywhere from 5% (e.g., Turkey, Nicaragua) to 35% (e.g., US, Australia) of the 1.35 million traffic deaths each year. A previous article, covering "International Trends in Alcohol and Drug Use Among Motor Vehicle Drivers," presents detailed evidence on the prevalence of alcohol-impaired driving in several different countries [24].

The World Health Organization (WHO) recommended four policies to reduce impaired driving in their 2018 report on the global status of road safety [209]:

- Adoption of a national drink-driving law;
- Setting blood alcohol concentration (BAC) limits for

Hearings (DOT HS 809 602); US National Highway Traffic Safety Administration: Washington, DC; 2003.

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ABOUT THE AUTHOR

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James C. Fell received both bachelor's and master's degrees in human factors engineering from the State University of New York (Buffalo, NY). He is currently a principal research scientist with the National Opinion Research Center (NORC) at the University of Chicago in the Bethesda, MD, office.

From 2001 to 2015 Mr. Fell was a senior research scientist at the Pacific Institute for Research & Evaluation (PIRE) in Calverton, MD. Before that, he worked at the US National Highway Traffic Safety Administration (NHTSA) in Washington, DC, from 1969 to 1999. While at NORC, Mr. Fell has completed a survey of highway safety issues for the New Mexico Highway Safety Office, an evaluation of a special DUI enforcement program for the Maryland Highway Safety Office, and a comprehensive analysis of DUI in crashes, roadside surveys, and arrests in Miami-Dade County for the Miami Foundation. For the Insurance Institute for Highway Safety (IIHS) he recently evaluated all alcohol ignition interlock laws in the US for their effectiveness and currently is studying the enforcement of minimum marijuana use age 21 laws in California. He has completed research on the effectiveness of graduated driver-licensing laws under a grant from the National Institute of Child Health and Human Development (NICHHD), on enforcement intensity measures and impaired driving on the roads, the effectiveness of underage alcohol policies, and the potential effectiveness of lowering the BAC limit from .08 to .05 BAC for driving sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), and studies on the effectiveness of responsible beverage-service training and enforcement, alcohol ignition interlock laws, high-visibility enforcement, and alcohol-monitoring devices on impaired-driving offenders for NHTSA. He has over 50 years of traffic safety and alcohol policy research experience and has authored or coauthored over 165 publications in book chapters, scientific journals, and conference proceedings.

Mr. Fell is a longtime member of the Association for the Advancement of Automotive Medicine (AAAM) (since 1969), including as past president (1988), Board of Directors member (1974–76, 1982–84, 2009–2011), scientific program chairman (1976), membership chairman (1981), treasurer (1985–86); fellow (1994); three-time Best Scientific Paper award winner (1979, 1983, and 2010); and recipient in 2016 of the Donald F. Huelke Lifetime Membership Award. Mr. Fell is currently president-elect of and the 2013 recipient of the Widmark Award from the International Council on Alcohol, Drugs, and Traffic Safety (ICADTS), and a member of the Research Society on Alcoholism (RSA), the Society for Prevention Research (SPR), and the Human Factors and Ergonomics Society (HFES). In 2015, Mr. Fell received the James J. Howard Highway Safety Trailblazer Award from the Governors' Highway Safety Association (GHSA) for sustained outstanding leadership in endeavors that significantly improve highway safety, and the Kevin Quinlan Advocacy Award from the Maryland Highway Safety Office.