

International Trends in Alcohol and Drug Use Among Motor Vehicle Drivers

A. S. Christophersen^{1,2*}, J. Mørland¹, K. Stewart³, H. Gjerde¹

¹Division of Forensic Sciences
Norwegian Institute of Public Health
Oslo
Norway

²Department of International Public Health
Norwegian Institute of Public Health
Oslo
Norway

³Prevention Research Center
Safety and Policy Analysis International
Oakland, California
United States of America

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* Corresponding author: Dr. Asbjørg S. Christophersen, Norwegian Institute of Public Health, P. O. Box 4404 Nydalen, NO-0403 Oslo, Norway; +47 21077860 (voice); Asbjorg.Christophersen@fhi.no.

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ABSTRACT: Trends in the use of alcohol and drugs among motor vehicle drivers in Australia, Brazil, Norway, Spain, and the United States have been reviewed. Laws, regulations, enforcement, and studies on alcohol and drugs in biological samples from motor vehicle drivers in general road traffic and fatal road traffic crashes (RTCs) are discussed. Roadside surveys showed a reduction of drunk driving over time in the studied countries; however, the pattern varied within and between different countries. The reduction of alcohol use may be related to changes in road traffic laws, public information campaigns, and enforcement, including implementation of random breath testing or sobriety checkpoints. For non-alcohol drugs, the trend in general road traffic is an increase in use. However, drugs were not included in older studies; it is therefore impossible to assess the trends over longer time periods. Data from the studied countries, except Brazil, have shown a significant decrease in fatal RTCs per 100,000 inhabitants over the last decades; from 18.6 to 4.9 in Australia, 14.5 to 2.9 in Norway, 11.1 to 3.6 in Spain, and 19.3 to 10.3 in the United States. The number of alcohol-related fatal RTCs also decreased during the same time period. The proportion of fatal RTCs related to non-alcohol drugs increased, particularly for cannabis and stimulants. A general challenge when comparing alcohol and drug findings in biological samples from several countries is connected to differences in study design, particularly the time period for performing roadside surveys, biological matrix types, drugs included in the analytical program, and the cutoff limits used for evaluation of results. For RTC fatalities, the cases included are based on the police requests for legal autopsy or drug testing, which may introduce a significant selection bias. General comparisons between high-income countries and low- and middle-income countries as well as a discussion of possible future trends are included.

KEYWORDS: Alcohol, driving under the influence, drugs, legislation, roadside surveys, road traffic crashes (RTCs), trends.

INTRODUCTION

Alcohol and Drug Use as Traffic Safety Risks

Road traffic crashes (RTCs) are killing more than 1.2 million people and injuring up to 50 million worldwide every year [247]. The number of RTCs is decreasing in high-income countries but significantly increasing in low- and middle-income countries [8]. Middle-income countries have the highest annual RTC fatality rates, at 20.1 per 100,000 population, slightly above low-income countries (18.3 per 100,000) and much higher than high-income countries (8.7 per 100,000) [247]. In 2013, RTCs in middle-income countries accounted for 80% of the world's RTC fatalities, while those countries had 72% of the world's population and 52% of the world's vehicles [247]. Some middle-income countries have had large economic growth during the last years, enabling more people to buy motor vehicles. According to estimates, the annual worldwide number of RTC deaths may double to 2.4 million by 2030, due mainly to increases in motorization and RTCs in low- and middle-income countries, if no effective measures are taken [248].

Driving under the influence (DUI) of alcohol has for many years been well known as a risk for road traffic safety [28,156]. Despite extensive focus in the scientific literature on the negative effects caused by alcohol, general

warnings in mass media, and improving law enforcement, alcohol is still one of the main contributing factors for RTCs [161,247].

The negative effects caused by use of illicit drugs and psychoactive medicines on the ability to drive safely gained little attention until the 1970s, when the first studies on drugs relevant to traffic safety were published [158]. Later, traffic safety related to drug use received steadily increasing attention at international conferences organized by the International Council on Alcohol, Drugs and Traffic Safety (ICADTS), and many studies have been performed to document the effects of drugs on traffic safety. Numerous review articles have been published [105,158,168,171, 177,183,222,225].

The majority of the world's countries do not have robust data on the involvement of alcohol and drugs in nonfatal RTC injuries [248], and almost half of all countries lack data on alcohol-related RTC deaths. Only 73 countries test all fatally injured drivers for blood alcohol levels. Furthermore, the World Health Organization (WHO) identified only 87 countries with death registration data meeting either of the following completeness criteria: completeness for the year estimated at 80% or more, or average completeness for the decade including the country-year of 80% or more [247]. More accurate data are available for fatal RTCs in some high-income countries, particularly

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Asbjørg Solberg Christophersen obtained her M.Sc.Pharm. degree from the University of Oslo (Oslo, Norway) in 1973 and a Ph.D. degree in pharmacy from the same university in 1980. Dr. Christophersen is now a senior scientist at the Division of Forensic Sciences of the Norwegian Institute of Public Health (Oslo, Norway) as well as professor emeritus at the Institute of Pharmacy of the University of Oslo.

Dr. Christophersen has been working as a researcher for the former National Institute of Forensic Toxicology (Oslo, Norway), and served as department director and acting director at the Division of Forensic Medicine and Drug Abuse Research of the Norwegian Institute of Public Health. She has published more than 120 papers in peer-reviewed journals on drug analyses in different biological matrix types, epidemiological research on alcohol and drugs, driving under the influence of alcohol and drugs, and road traffic accidents. She has been secretary of the board of the International Council on Alcohol, Drugs and Traffic Safety (ICADTS) and president for the International ICADTS Conference in Oslo in 2010.

Jørg Mørland received an M.D. degree from the University of Oslo (Oslo, Norway) in 1967 and a Ph.D. degree in pharmacology from the same university in 1975. Dr. Mørland is now a senior scientist at the Division of Forensic Sciences of the Norwegian Institute of Public Health and a professor emeritus at the University of Oslo.

Dr. Mørland is a medical specialist in clinical pharmacology. He has served as professor of pharmacology at the University of Oslo and the University of Tromsø (Tromsø, Norway), director of the former National Institute of Forensic Toxicology, and director of the Division of Forensic Medicine and Drug Abuse Research of the Norwegian Institute of Public Health until 2012. His main research field is biomedical effects of alcohol and drugs of abuse, their metabolites and metabolism. He has published more than 350 articles in peer-reviewed journals on pharmacology, toxicology, forensic sciences, neuroscience, alcoholism, epidemiology, drug analysis, and road traffic safety.

Kathryn Stewart obtained her M.Sc. degree in sociology from the University of Wisconsin (Madison, WI). She is a founding partner in Safety and Policy Analysis International (Lafayette, CA) and serves as director of the Dissemination and Diffusion of Science-Based Prevention Component at the Prevention Research Center, Pacific Institute for Research and Evaluation (Berkeley, CA).

Ms. Stewart has served as senior research scientist at the Pacific Institute for Research and Evaluation (Calverton, MD) and as deputy director of the Underage Drinking Enforcement Training Center (Calverton, MD). She has broad experience in research and evaluation related to the prevention of problems related to substance use, with a special emphasis on underage drinking, drug- and alcohol-impaired driving and alcohol policy; she has published more than 70 reports and articles. Ms. Stewart is the president of the International Council on Alcohol, Drugs and Traffic Safety and is the past chair of the Committee on Alcohol, Other Drugs and Transportation of the US Transportation Research Board of the US National Academy of Sciences.

Hallvard Gjerde obtained his M.Sc. degree in biochemistry from the University of Oslo (Oslo, Norway) in 1983 and a Ph.D. from the Faculty of Medicine of the same university in 1988. Since 2007, Dr. Gjerde has been a senior scientist in the Division of Forensic Sciences of the Norwegian Institute of Public Health (Oslo, Norway).

From 1983 to 1992, Dr. Gjerde was a researcher at the former National Institute of Forensic Toxicology (Oslo, Norway), and worked on pharmaceutical analysis from 1992 to 2007. He has published more than 70 articles in peer-reviewed journals on drug analysis, forensic sciences, alcohol and drug use, and road traffic safety.