

# How Nordic Countries Enforce Impaired Driving Legislation

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	INTRODUCTION	132
I.	LEGISLATION	
	A. Drunk-Driving Legislation	
	B. Clinical Tests for Drunkenness	
	C. Drugged-Driving Legislation	133
	D. Zero-Tolerance Laws for Scheduled Drugs	134
	E. Repeat Offending	134
II.	TOXICOLOGICAL ANALYSIS	135
	A. Roadside Screening Tests	136
	B. Evidential Breath-Alcohol Analysis	137
	C. Analysis of Drugs in Blood Samples	138
	D. Types of Non-Alcohol Drugs Used by Drivers	138
	E. Dealing with Analytical Uncertainty	138
III.	DISCUSSION	139
	CONCLUSIONS	140
	REFERENCES	141
	ABOUT THE AUTHOR	143

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## How Nordic Countries Enforce Impaired Driving Legislation

**REFERENCE:** Jones AW: How Nordic countries enforce impaired driving legislation; *Forensic Sci Rev:* 34:131; 2022

**ABSTRACT**: This article reviews how the Nordic countries of Denmark, Finland, Norway, and Sweden enforce their legislation pertaining to driving under the influence of alcohol and/or other impairing drugs. The evidence necessary for a successful prosecution of traffic offenders has undergone radical changes over the past 50 years. The once widely used clinical tests of impairment are no longer a major element of the prosecution case and a physician is more seldom required to examine apprehended drivers and document any clinical signs and symptoms of alcohol and/or drug influence. These clinical tests have been superseded by results derived from a comprehensive toxicological analysis of psychoactive substances in samples of the driver's blood. The current statutory limits of blood-alcohol concentration (BAC) are among the lowest in the world: Norway and Sweden (0.20 g/kg) and Denmark and Finland (0.50 g/kg). Results from using evidential quality breath-alcohol instruments are accepted as evidence in drunk-driving cases and this has necessitated setting statutory breath-alcohol concentration (BrAC) limits. Laws dealing with driving under the influence of drugs (DUID) other than alcohol have also been updated and made more pragmatic for prosecution of traffic offenders. In Finland and Sweden zero-tolerance laws exist, making it illegal to drive with any quantifiable amount of a scheduled drug in the driver's blood. Prescription drugs are exempt from this zero-tolerance mandate provided the medication was used in accordance with a physician's ordination. Lacking a valid prescription or if there is a supratherapeutic concentration of the drug in blood, this will lead to a prosecution for DUID. In Denmark and Norway threshold concentration limits have been established for many psychoactive drugs, both licit and illicit. After these stricter laws for DUID were introduced, the number of suspects apprehended by the police per year increased by as much as tenfold in some Nordic countries. There is increasing evidence that many traffic delinquents in the Nordic countries suffer from a substance-use disorder, because repeat-offending is a common occurrence. This suggests that some type of treatment and rehabilitation program might be more beneficial compared with conventional penalties for people arrested for DUI and/or DUID.

**KEYWORDS**: Alcohol, blood analysis, drug abuse, DUID, evidential breath-analysis, enforcement strategy, impaired driving legislation, Nordic countries, traffic safety.

#### **INTRODUCTION**

The Nordic countries of Denmark, Norway, Sweden, and the Republic of Finland are located geographically in the northern part of Europe (**Figure 1**). These nations have relatively low population densities and citizens enjoy a high standard of living, good social security, and affordable health care systems. Average life expectancy in these countries ranks among the longest in the world. One often associates the phrase, "You are looked after from the cradle to the grave", with life in these Nordic countries.

Heavy drinking and drunkenness were early recognized as a danger for public health and longevity, and alcohol prohibition was enforced in Finland between 1919 and 1932. The cost and availability of alcoholic beverages are tightly linked to per capita total consumption and alcohol-related harm. For this reason, sale of strong beers, wines, and malt liquors is under government control and only available for purchase at certain outlets — Systembolaget in Sweden, ALKO in Finland, and Vinmonopolet in Norway. The attitude toward alcohol consumption in Denmark, which is located closer to central Europe, has always been more liberal and alcoholic beverages can be purchased at supermarkets and liquor stores throughout the country.

#### I. LEGISLATION

### A. Drunk-Driving Legislation

In 1936, Norway became the first country in the world to introduce a punishable limit of blood-alcohol concentration (BAC) for driving. This was set at 0.50 g/kg or roughly 0.05 g/100 mL. Sweden followed this lead and introduced a statutory BAC limit of 0.80 g/kg (0.08 g/100 mL) in 1941 [52]. The statutory BAC limits for driving in these countries are now set at 0.20 g/kg (0.02 g/100 mL), and this applies to all motorists, regardless of their age and/or driving experience. It took a lot longer for Finland and Denmark to establish statutory BAC limits for driving, which are currently set at 0.50 g/kg (0.05 g/100 mL).

#### **B.** Clinical Test for Drunkenness

Prior to the establishment of alcohol concentration per se statutory limits, the main prosecution evidence in drunk-driving cases was the results of clinical examinations of suspects, done by physicians or police surgeons about 1–2 h after arrests were made [56]. The examinations were done using a standardized protocol including a

- 72. Rubenzer SJ: The standardized field sobriety tests: A review of scientific and legal issues: *Law Hum Behav* 32:293: 2008.
- Simonsen KW, Hasselstrom JB, Hermansen SK, Rasmussen BS, Andreasen MF, Christoffersen DJ, Linnet K: The incidence of psychoactive substances and alcohol among impaired drivers in Denmark in 2015–2019; *Forensic Sci Int* 333:111207; 2022.
- 74. Simonsen KW, Linnet K, Rasmussen BS: Driving under the influence of alcohol and drugs in the eastern part of Denmark in 2015 and 2016: Abuse patterns and trends; *Traffic Inj Prev* 19:468; 2018.
- 75. Simonsen KW, Steentoft A, Hels T, Bernhoft IM, Rasmussen BS, Linnet K: Presence of psychoactive substances in oral fluid from randomly selected drivers in Denmark; *Forensic Sci Int* 221:33: 2012.
- Skurtveit S, Christophersen AS, Grung M, Morland J: Increased mortality among previously apprehended drunken and drugged drivers; *Drug Alcohol Depend* 68:143; 2002.
- Steentoft A, Simonsen KW, Linnet K: The frequency of drugs among danish drivers before and after the introduction of fixed concentration limits; *Traffic Inj Prev* 11:329; 2010.
- 78. Strand MC, Arnestad M, Fjeld B, Morland J: Acute impairing effects of morphine related to driving: A systematic review of experimental studies to define blood morphine concentrations related to impairment in opioid-naive subjects; *Traffic Inj Prev* 18:788; 2017.
- 79. Strand MC, Vindenes V, Gjerde H, Morland JG, Ramaekers JG: A clinical trial on the acute effects of methadone and buprenorphine on actual driving and cognitive function of healthy volunteers; *Br J Clin Pharmacol* 85:442; 2019.
- 80. Stuster J: Validation of the standardized field sobriety test battery at 0.08% blood alcohol concentration; *Hum Factors* 48:608; 2006.
- 81. Sweedler BM, Biecheler MB, Laurell H, Kroj G, Lerner M, Mathijssen MP, Mayhew D, Tunbridge RJ: Worldwide trends in alcohol and drug impaired driving; *Traffic Inj Prev*

- 5:175; 2004.
- Valen A, Bogstrand ST, Vindenes V, Gjerde H: Toxicological findings in suspected drug-impaired drivers in Norway — Trends during 1990–2015; Forensic Sci Int 280:15; 2017.
- 83. Walther L, de Bejczy A, Lof E, Hansson T, Andersson A, Guterstam J, Hammarberg A, Asanovska G, Franck J, Soderpalm B, et al.: Phosphatidylethanol is superior to carbohydrate-deficient transferrin and gamma-glutamyltransferase as an alcohol marker and is a reliable estimate of alcohol consumption level; *Alcohol Clin Exp Res* 39:2200; 2015
- 84. van der Sluiszen N, Vermeeren A, Verster JC, van de Loo A, van Dijken JH, Veldstra JL, Brookhuis KA, de Waard D, Ramaekers JG: Driving performance and neurocognitive skills of long-term users of benzodiazepine anxiolytics and hypnotics; *Hum Psychopharmacol* 34:e2715; 2019.
- 85. Wiese Simonsen K, Steentoft A, Bernhoft IM, Hels T, Rasmussen BS, Linnet K: Psychoactive substances in seriously injured drivers in Denmark; *Forensic Sci Int* 224:44; 2013.
- 86. Wigmore JG: Canada legalizes recreational cannabis; *Forensic Sci Rev* 31:84; 2019.
- 87. Vindenes V, Jordbru D, Knapskog AB, Kvan E, Mathisrud G, Slordal L, Morland J: Impairment based legislative limits for driving under the influence of non-alcohol drugs in Norway; *Forensic Sci Int* 219:1; 2012.
- 88. Vindenes V, Jordbru D, Knapskog AB, Kvan E, Mathisrud G, Slordal L, Morland J: Impairment based legislative limits for driving under the influence of non-alcohol drugs in Norway; *Forensic Sci Int* 219:1; 2012.
- 89. Vindenes V, Boix F, Koksaeter P, Strand MC, Bachs L, Morland J, Gjerde H: Drugged driving arrests in Norway before and after the implementation of per se law; *Forensic Sci Int* 245:171; 2014.
- 90. Yao J, Voas RB, Lacey JH: Drivers with alcohol use disorders and their risks of crash involvement; *Drug Alcohol Depend* 183:210; 2018.



## **ABOUT THE AUTHOR**

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Alan Wayne Jones was born in Wales (UK) but has spent most of his career working in Sweden. He was awarded a B.Sc. degree in 1969 and a Ph.D. degree in 1974, both from the University of Wales (Cardiff, UK). Dr. Jones is now retired from his appointment as senior scientist at Sweden's National Laboratory of Forensic Medicine, Division of Forensic Genetics and Forensic Toxicology, since 2013. He currently serves as a guest professor in forensic toxicology at the Department of Clinical Chemistry and Pharmacology, University of Linköping, Sweden.

Dr. Jones has testified as an expert witness in hundreds of criminal trials involving drug-related crimes, DUI, DUID, and overdose deaths in Sweden and several other countries. He has peer-reviewed hundreds of manuscripts submitted for publication to about 70 international journals and is a member of the editorial boards of a dozen other journals specializing in substance abuse, analytical toxicology, forensic science, and legal medicine. Since his first publication in 1974, Dr. Jones's bibliography currently lists about 470 journal articles, reviews and book chapters.

Dr. Jones's contributions to the science of alcohol and drug abuse have been recognized with a number of awards and prizes including the Widmark Award (1997) from the International Council on Alcohol, Drugs and Traffic Safety, the Rolla Harger Award (2002) from the American Academy of Forensic Sciences, the Robert Borkenstein Award (2004) from the US National Safety Council, the Alan Curry Award (2011) from The International Association of Forensic Toxicologists, and most recently the Kurt Dubowski Award (2017) from the International Association of Chemical Testing.