

Driving under the Influence of Drugs in the Canton of Geneva, Switzerland.

Results and Road Side Survey Project.

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Abstract

In Switzerland, drivers may be tested for alcohol in blood, but also for the consumption of drugs that may reduce driving performance. In the state of Geneva, about 1200 alcohol analyses are made each year vs. 50-80 drug analyses only. This paper presents the results of drug screening from 1995 to 1999. A total of 311 urine samples have been tested for 7 parameters (amphetamines, barbiturates, benzodiazepines, cannabis, cocaine, methadone, opiates). The results show that cannabis is the most frequent drug, after alcohol. As those 311 samples represent 5% only of all drivers tested, we are planning to make a road side survey during 6 month. During this period, all drivers stopped by the police for a breathalyzer test would be tested for urine also. The interpretation of the results should help us understand if there are more drugged drivers than thought before, and if policemen should be instructed to investigate further even if the driver is drunked.

Introduction

Switzerland is a federal state divided in 23 cantons. Laws regarding traffic safety are federal, although their enforcement may vary slightly from one canton to another. A policeman is entitled to stop a car whose driver didn't observe a traffic rule or seems to be under the influence of alcohol. The driver has then to be tested by a breathalyzer. In cases of a positive result, the driver is taken to nearby hospital or police station for a blood sampling and determination of blood alcohol concentration (BAC). Maximum allowed BAC is 0.8 ‰ (g/kg). If the driver is suspected of driving under the influence of drugs (DUI), the policeman may ask for a urine collection in view of a urinalysis. Drug analysis in urine and blood is authorized in Switzerland, but details regarding body fluids collection and analysis are not settled in the law. In order to establish equity and procedure harmonization, federal recommendations have been introduced in 1995. They describe the procedures for fluids collection and analyses as well as the minimal requirements and the certification procedure of laboratories performing such analyses. At the end of 1999, 8 laboratories in Switzerland are entitled to perform DUI-related analyses.

Methods

Blood and urine samples are collected by a medical doctor and brought to our lab. An immunoassays screening is performed on the urine sample, using tests and cut-off values given in Table 1.

Test	Reference substance	cut-off (ng/mL)
amphetamines	d-methamphetamine	1000
barbiturates	secobarbital	200
benzodiazepines	nordiazepam	100
cannabis	11-nor- Δ^9 -THC-9-COOH	50
cocaine	benzoylecgonine	300
methadone	methadone	300
opiates	morphine	300

Table 1. Immunoassays performed on urine samples.

When positive results are obtained, they are confirmed by a non-immunological method, such as gas chromatography coupled to mass spectrometry (GC/MS). When positive results are confirmed for drugs which may reduce the ability to drive, a quantitation of these substances is made in blood, in order to assess if the driver was under influence when he/she was driving. BAC was considered as positive when above 0.1 ‰ (g/kg).

Results obtained from 1995 to 1999

In the canton of Geneva (400'000 inhabitants), about 1'000-1'200 blood analyses are performed each year vs. 50-80 urine analyses only. Table 2 shows the results of urine screening.

Year	N	NEG	AMPH	BARB	BENZ	CANN	COCA	METH	OPIA	BAC
1995	81	7	10	10	36	40	11	28	29	39
1996	64	11	0	2	23	34	17	14	24	33
1997	61	12	4	4	13	32	12	9	11	46
1998	50	13	3	1	7	25	9	7	9	36
1999	55	8	9	0	18	36	12	9	11	34
Total	311	51	26	17	97	167	61	67	84	188
Percent of total		16%	8%	5%	31%	54%	20%	22%	27%	60%

Table 2. Results of urine screening by immunoassays on urine samples collected by Geneva police. AMPH = amphetamines, CANN = cannabis, COCA = cocaine, OPIA = opiates, BARB = barbiturates, BENZ = benzodiazepines, METH = methadone, NEG = negative samples, BAC: Blood alcohol > 0.1 g/kg.

The sum of percentages is well over 100%, clearly indicating that some drivers abuse of more than one substance.

Table 3 shows the same results as in Table 2, but expressed in percentage of the number of samples per year. As this number is not constant each year, this Table gives a better view of the evolution observed over the period 1995 - 1999.

Year	N	NEG	AMPH	BARB	BENZ	CANN	COCA	METH	OPIA	BAC
1995	81	9%	12%	12%	44%	49%	14%	35%	36%	48%
1996	64	17%	0%	3%	36%	53%	27%	22%	38%	52%
1997	61	20%	7%	7%	21%	52%	20%	15%	18%	75%
1998	50	26%	6%	2%	14%	50%	18%	14%	18%	72%
1999	55	15%	16%	0%	33%	65%	22%	16%	20%	62%

Table 3. Results of urine screening expressed as percentage of N. Same legend as in Table 2.

The percentage of drug-negative samples is rather low. This may indicate either that policemen are efficient in detecting drivers under the influence of drugs, even if they are drunk, or that an unknown proportion of drug abusing drivers are not submitted to drug analysis when they are convicted of driving under the influence of alcohol.

An extrapolation of the above shown results to the rest of the drivers' population is almost impossible. In order to get a better view of this problem, we intend to make a road side survey.

Road side survey description

The Swiss law does not allow a driver to be stopped and tested for alcohol if there has been no accident, traffic rules violation or evidence of odd driving. This outrules a survey which would cover the entire driving population at a known place during a known time. Therefore, we chose another way, which is legal. During a period of 6 months, all drivers stopped by the police for a breathalyzer test should be tested for urine also, using the conditions described above.

There is of course a bias to this study, as the drivers stopped will not be representative of the entire drivers' population. But one has to consider that the authorities' primary source of interest is the driver who seems unable to drive correctly. The results will then show if drugs - other than alcohol - played a role in the driver's inability, and if policemen should be instructed to investigate further even if the driver is drunk.

This kind of survey is important to help the political authorities become aware of the DUI problem. As Switzerland is not (yet) a member of the EU, our country won't join the common survey project (ROSITA). But the results of a small-scale survey could influence a future

federal law revision, in order to include legal requirements allowing Switzerland to take part in a foreign project.