ELSEVIER

Accident Analysis and Prevention 37 (2005) 1049–1055

ACCIDENT ANALYSIS & PREVENTION

www.elsevier.com/locate/aap

Evaluation of a program to reduce motor-vehicle collisions among young adults in the county of Landes, France

Laure I. Carcaillon, L. Rachid Salmi *,

Atout-Route Evaluation Group[1]

Laboratoire Santé Travail Environnement (EA 3672, IFR99), Institut de Santé Publique d'Epidémiologie et de Développement, Université Victor Segalen Bordeaux 2, Bordeaux, 146 rue Léo-Saignat, F-33076 Bordeaux Cedex, France

Received 21 January 2005; received in revised form 19 May 2005; accepted 2 June 2005

Abstract

The aim of this study was to evaluate the impact of a prevention program called "Atout-Route", based on the concept of commitment. The program was implemented in March 2000, to reduce the number of drivers under the age of 25 years involved in motor-vehicle collisions in the county of Landes (southwestern France). Using data from the regional observatory of road safety, we defined a target and three control groups similar on age or location. We used Poisson and quasi-Poisson regression to estimate whether the observed evolution of motor-vehicle collisions, after the program was implemented, was different in the targeted group than in the three control groups. The number of motor-vehicle collisions decreased everywhere and in every age group. The effect of the prevention program was not statistically significant (relative risk = 0.89; 95% confidence interval 0.74–1.07). Our results are compatible with a positive effect of the program. The possible dilution of its effect by national road safety actions implemented since 2000, and our early assessment are possible reasons for the non-significant observation.

Keywords: Alcohol; Accidents; Traffic; Health education; Evaluation studies; Fatigue; Substance abuse

1. Introduction

In France in 2002, 10% of all collisions and 30% of fatal collisions involved a driver with a blood alcohol concentration (BAC) higher than the legal BAC (Observatoire National Interministériel de la Sécurité Routière, 2003). Reducing alcohol-impaired driving remains an important challenge for road safety and public health professionals. However, the best way to prevention motor-vehicle collisions is still debated (Christoffel and Gallagher, 1999, pp. 23–37). To prevent a motor-vehicle collision, education and information are important options, but modifications of the road environment also play an important role. Moreover, many authors recognize the efficacy of multi-disciplinary approaches for developing successful alcohol and drunk-driving countermeasures programs (Christoffel and Gallagher, 1999; Organisation for Economic Co-operation and Development, 2002; DeJong and Hingson, 1998; Hingson et al., 1996; Holder et al., 2000). Different prevention actions, such as law enforcement, targeted measures or driver education programs have already shown their effectiveness at reducing drinking and driving behavior (DeJong and Hingson, 1998; Voas et al., 2003). However, the proper effect of educational and behavioral prevention programs on alcohol-related collisions remains difficult to evaluate (Organisation for Economic Co-operation and Development, 2002; DeJong and Hingson, 1998).

In France, an original prevention campaign called "Atout-Route" (Asset-Road) was implemented in March 2000 in the

* Corresponding author. Tel.: +33 557 57 14 37; fax: +33 556 24 00 81.
E-mail address: rachid.salmi@isped.u-bordeaux2.fr (L.R. Salmi).

[1] Members of the Atout-Route Evaluation Group are Mrs. Sylvie Ramis and M. Gilles Cosson, from the Comité départemental d'éducation pour la santé des Landes, who provided information on the program, and Mr. Michel Gien and Mr. Thierry Hervaud, from the Direction régionale de l'équipement d'Aquitaine, who provided the data file.

0001-4575/$ – see front matter © 2005 Elsevier Ltd. All rights reserved.
doi:10.1016/j.aap.2005.06.003

county (département) of Landes. The program is based on the concept of commitment (Cialdini et al., 1978; Wang and Katzev, 1990; Katzev and Wang, 1994), by which the commitment of individuals to respect a contract is supposed to improve the effectiveness of a prevention program. This concept has been applied and evaluated in industrial (Cialdini et al., 1978) and environmental programs (Wang and Katzev, 1990; Katzev and Wang, 1994). In road safety, it has recently been shown to be effective in rehabilitation training courses for traffic regulation offenders (Delhomme, 2005). The objective of our study was to evaluate the effect of the "Atout-Route" program on the number of collisions involving young drivers in the county of Landes, France.

2. Methods

2.1. Context

Landes is one of five counties in Aquitaine, the most southwestern region in France; it has a total population of more than 300,000 (Institut National de la Statistique et des Etudes Economiques, 2005), and a total area of 9237 km^2 (3566 square miles). Three-quarters of the county is made up by a plain, mostly covered by forest. Therefore, roads are dangerous because they are rural, straight or sinuous and tree-bordered. Motor-vehicle related mortality in the Landes is above the national average, and ranks third in the country (Observatoire National Interministériel de la Sécurité Routière, 2003). Young drivers between the age of 18 and 24 years are 2.3 times more likely to die on the road then older driver in the Landes, and 30% of serious accidents are due to alcohol.

Since March 2000, the program "Atout-Route" is supported by local and regional authorities, such as the prefecture, the regional public health program (PRS), the local comity for alcoholism prevention (CDPA) and the local comity for health education (CODES40). This program proposes a contract to drivers under 25 years of age, living in the county of Landes, which principle is to make young drivers responsible and aware of the risk taken when driving under the influence. The program is a multifaceted strategy meant to modify attitudes towards and behaviors related to the risk of alcohol, drugs and fatigue while driving. The initial goal of the program was to enroll approximately 500 young drivers per year during the planned 5-year duration. The first step was to recruit various organizations and businesses somehow related to road safety (schools, insurances...). These partners would organize meetings and conferences or financially support the program.

"Atout-Route" was to be presented in all high schools of the county of Landes. The aim of these meetings was to provide information regarding the risk of driving under the influence of alcohol, drug or fatigue and how to avoid risky behaviors. At the end of the meeting, young drivers can decide whether they want to sign the contract or not. They are also informed that signing the contract provides access to benefits, such as price reductions from insurance companies, driving schools, car equipment stores, garage mechanics, as well as free non-alcoholic beverages in discotheques. The contract is also available in the prefecture of the department and any young driver can ask for information and sign the contract at any time. Therefore, "Atout-Route" is an informative and educational program characterized by the interaction of various actors in public health and road safety.

2.2. Data sources

We used data provided by the Regional Observatory of Road Safety, regarding all traffic collisions that occurred in Aquitaine from January 1, 1995 to December 31, 2002. In France, as soon as a collision involving injuries occurs, the police forces write a report. This report gathers comprehensive information about the accident, its location, drivers, types of vehicles involved and medical consequences to occupants within 6 days (injury, hospitalization, or death). All police reports are centralized at the Service d'Etudes Techniques des Routes et Autoroutes and constitute the National Accident File (Chapelon and Loones, 2005). Our data came from a regional extraction of this file and included only collisions that involved at least one automobile or light utility vehicle, and occurred in the county of Landes or in one of the four other counties of Aquitaine. Denominator data regarding number of inhabitants in each county was extracted from census data available from the French National Institute for Statistics and Economic Studies (Institut National de la Statistique et des Etudes Economiques, 2005). We used 1999 census estimates, as this year was the middle point between the beginning and end of our observation period.

2.3. Evaluation design

The study period was divided in a "before period" (January 1995 to February 2000) and an "after period" (March 2000 to December 2002). We defined one target and three control groups. The target group included all collisions that occurred in the county of Landes and involved at least one driver aged less than 25 years (hereafter called "Landes, under 25"). The three control groups were: "Landes, 25 or more", "Rest of Aquitaine, under 25" and "Rest of Aquitaine, 25 or more". When a collision involved at least one young driver, it was considered of the "under 25" group regardless of the age of the other drivers.

2.4. Data analysis

To characterize each group, we computed the monthly average rate per 10,000 collisions per inhabitants, by dividing the monthly average number of collisions in each age and area groups by the general population of the group.