

The immediate impact of the 2003 new law on road safety in Italy: a comparison of mortality and morbidity data in the years 2002-2004

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Background

Road traffic accidents represent an important public health problem in both industrialised and developing countries. In Italy, around 270,000 road traffic accidents occur annually. In 2001 this resulted in 6682 deaths, more than 20% of which were the result of an accident among users of two-wheeled motor vehicles [1]. There is evidence that the raise in the speed limit [2] is associated with a sustained increase in traffic related deaths and case fatality rates.

On 1st of July 2003 a new law was implemented, introducing new legal sanctions, the driver license points (after the experience in Germany, France, UK and Ireland, New Zealand and Brasil) [3,4], new speed limits and camera controls [5].

The aim of this study is to describe the differences in the epidemiological trend of road accidents in Italy, comparing data before and after the implementation of the new penalty points system law.

Methods

Data collection

Data concerning the national level of deaths and injuries in the period 1999-2003, was taken from the following sources:

Numerators:

- Istat, Statistica degli incidenti stradali Anno 2001 (for the years 1999-2001);
- Istat, Annuario statistico 2004 (for the year 2002);
- Istat, Annuario statistico 2005 (for the year 2003);

Denominators:

- data related to the resident population: Istat, 14th General Census (year 2001).

Regarding the differences in the trends for road accidents after the implementation of the new law, we used official data from the Public Security Department, Ministry of Internal Affairs, comparing road accidents for the two periods 1st of July, 2002 to 30th June, 2003 and 1st of July, 2003 to 30th June, 2004 [6].

The data pertains only to accidents in which Police and Carabinieri collected information, which represents the vast majority of traffic related data.

We obtained data on the number of accidents (with or without deaths), number of injuries and deaths, as well as on speed limits, helmet use and seat belts.

Statistical analysis

Descriptive analysis was conducted in order to describe the correlation between the number of driver licence points deducted in the period July 2003 to June 2004 and the corresponding decrease in traffic related events in relation to the month of the previous year. Spearman's correlation coefficient were calculated taking into account data for each month.

The statistical significance was set at 0.05. Data management and statistical analysis were conducted using SPSS 12.0.

Results

Before the implementation of the new law, the death and injury rates of road accidents up to 2002 were stable or increasing (mean number of deaths equal to 6680 and mean number of injuries equal to 329000, in the period 1999-2002) while a sensible decline was observed in 2003 (6018 and 318961, respectively).

In the summer of 2003, in respect to the same time period in 2002, we observed a 22.8% decrease in the total number of road accidents, a 23.8% decrease in the number of accidents resulting in injury and a 22.9% decrease in the number of accidents resulting in death (Figure 1).

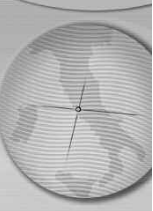
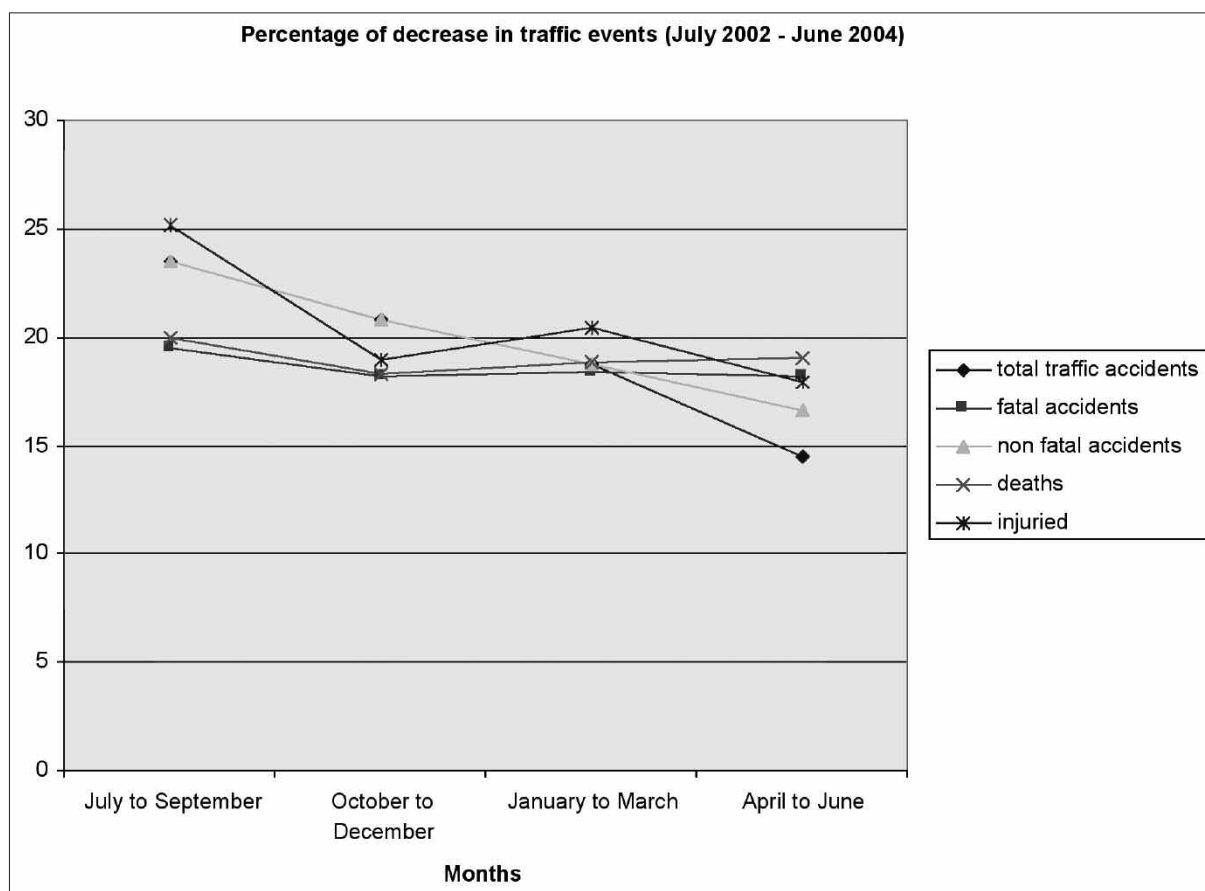


Figure 1 . Percentage of decrease in traffic events after the implementation of the new law on road safety in Italy (1st of July, 2002 – 30th June 2003, and 1st of July, 2003– 30th June 2004)



It is interesting to note that the decreasing trend was more evident on ordinary roads than highways (reduction of 25%, 24.8% and 23.7% in the total numbers of road accidents, accidents resulting in injury and accidents resulting in death respectively).

In the second time period considered (October - December 2003) we observed an 18.6.8% decrease in the total number of road accidents, a 22.8% decrease in the number of accidents resulting in injury and an 18.3% decrease in the number of accidents resulting in death.

In the last time period (January - June 2004) we observed a 16.4% decrease in the total number of road accidents, a 19.8% decrease in accidents resulting in injury, and a 19% decrease in accidents resulting in death. In almost all of the time periods considered, the decrease in the number of accidents on highways was lower.

There was an 8.3% reduction in the number of Infractions of the road rules, while fines for speeding increased by 44.8%. Furthermore, there was an increase in the use of seat belts and helmets, while fines for not using these devices decreased by 42.2% and 44.3% respectively.

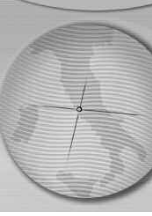
As far as the deduction of driving licence points is concerned, a decreasing trend can be observed in the last three months of 2003, while during the July-September 2003 the level remains constant. The age-groups in which had the highest deductions were 20-24 and 25-29 years [7].

Statistical analysis revealed that the number of driving licence points deducted in the period July 2003 - June 2004 was significantly associated with total traffic accidents ($r = 0.575$; $p = 0.049$); number of fatal accidents ($r = 0.629$; $p = 0.028$) and number of deaths ($r = 0.677$; $p = 0.016$).

Discussion

Recently, health impact assessment (HIA) has received greater attention for its ability to predict the potential impact of policies, programmes or projects on the population's health, especially in the field of road policies and transport strategies [8,9].

The new road safety law in Italy has demonstrated to be effective in reducing both the number of injuries



and deaths by almost a quarter just after its implementation, and by one sixth in the time period of Spring 2004. This result is very interesting, and it is probably due to an increase in road control by Police personnel, and to drivers' real fear of the new penalty points system. Moreover, the effect of the law might be mediated by a greater awareness of road safety by road users.

The introduction of the penalty points system and the related reduction in road traffic accidents could also have a great impact on health care systems. In fact, reduced road traffic accidents would result in a reduction in hospital trauma workloads. Lenehan and coll. and Donnelly and coll. [10,11] observed a dramatic reduction (36.7%) in total road traffic accidents related discharges from hospitals in Ireland (bed occupancy was almost halved), after the introduction of new legislation, especially for head and thoracic injuries which were halved. They found that the pattern of orthopaedic injury was significantly altered with a >50% absolute reduction in high velocity injuries. Furthermore, the effects of injury reduction were primarily seen in non-orthopaedic sub-specialities.

The main limitation of this study relates to the unavailability, at the national level, of traffic accident data from the Municipal Police during this period, due to the fact that data collection is not centralised, as it is for the Carabinieri and Police data. However, data from the Carabinieri and Police Departments does represent most of the traffic accidents.

The strong relationship between road traffic events and the deduction of points from the driver's licence suggests that police control may play a key role in preventing road traffic accidents. Further research is required to confirm these preliminary findings.

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