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## Effects of economic recession on road safety indexes

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### Abstract

During the last years, the investment in both construction and conservation of transport infrastructures has been considerably reduced in several countries, as Spain. After a number of years in which economic circumstances have forced Governments to reduce budgets earmarked for the maintenance and creation of new ways, it is interesting to analyze whether this has taken a toll on accident rates.

The paper evaluates if there are significant changes in the road safety through these years in Spain, comparing the annual statistics concerning investment in infrastructure and accidents. Thus, the classical risk, mortality and severity indexes have been analyzed to understand their real trends. Finally, through linear regression techniques, it is shown how these trends are related to the budgets invested each year, in order to draw interesting conclusions about the effect of their reduction.

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### 1. Introduction

The economic difficulties of the Governments of different countries have resulted that, in recent years, contributions for construction and maintenance of roads have been considerably reduced. But on the other hand, during the years of economic crisis, the number of movements on the roads and the length of them have dropped. Therefore, this article analyzes the impact of this decrease in budgets on the usual road safety indexes: risk, mortality and severity.

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After this first chapter of introduction to the problem, Chapter 2 shows the evolution of the parameters of study over the years. Comparisons between risk levels and budgets are collected in Chapter 3, where the relationship between them, using linear regression techniques, is discussed. Finally, Chapter 4 includes the main findings of the study.

## 2. Data analysis

In this section, the evolution of the budgets reserved for roads and the traffic accidents registered in Spain will be presented, as well as other economic aspects, such as the fleet of vehicles or the variations in reported traffic volumes.

### 2.1. Economic analysis

In the first place, data from the budgets of the Spanish Ministry of Development have been collected, both in their total values as only those for roads -construction or maintenance-. This information has been obtained from Ministerio de Fomento (2008-2016). Figure 1 shows their evolution between 2008 and 2016 (provided this last). There, we can see that there was generalized decrease of budgets, while from 2015 the trend starts to be ascending.

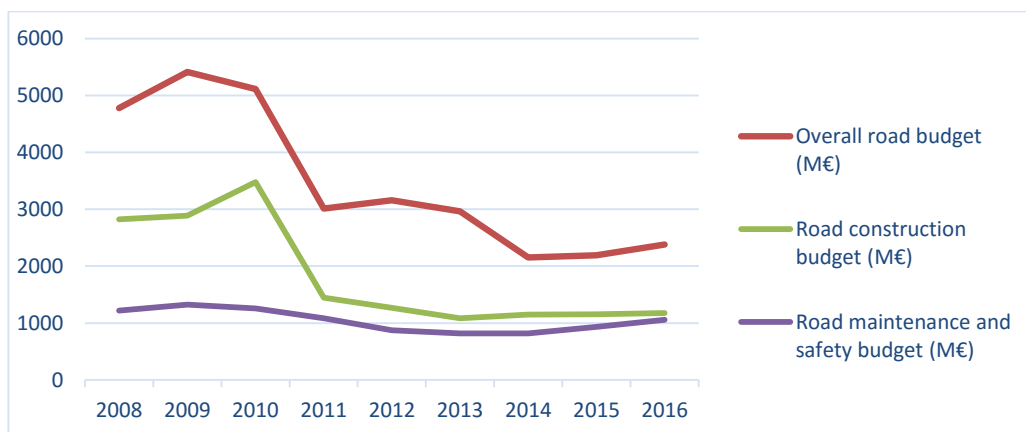


Fig. 1. Evolution of investment in roads.

On the other hand, it is also interesting to analyze how the vehicle fleet and the total traffic recorded on the tracks have evolved during the years of the crisis, in order to establish comparisons in this regard. Such data have been obtained from Ministerio de Fomento (2015a), as well as documents that collect the main figures of the accident road (Dirección General de Tráfico, 2009-2015), and are included in Figure 2. There, we can see that the vehicle fleet has had two 'valley' years (2009 and 2013), and that in 2014, there was a small increase compared to the previous year. However, the volume of traffic (measured in millions of vehicle-kilometer) has been decreasing during the crisis, although in the year 2014 the trend changes, increasing with respect to 2013.

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