

Mathematical model forecasts fewer workplace accidents in 2011 and 2012 in Spain

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A mathematical model forecasts fewer workplace accidents in 2011 and 2012.
Credit: SINC

The number of workplace accidents in Spain will fall progressively over 2011 and 2012, according to the predictions made by a mathematical model developed by researchers from the University of Castilla-La Mancha. The biggest drop will be in the number of accidents that take place during travel between people's homes and places of work.

Two researchers from the University of Castilla-La Mancha have combined mathematical models (univariate and multivariate) to generate a new one that makes it possible to predict the evolution of workplace accidents at varying levels of seriousness: slight, serious and fatal,

including those that take place in itinere (between home and work). The details have been published in the journal *Reliability Engineering & System Safety*.

Over recent weeks, the authors have updated the model for the 2010-2012 period. Analysis of the results shows a decline in the number of accidents in nearly all the series evaluated. According to the model, there will only be an increase in accidents where no absence from work is requested (rising from 804,526 in 2010 to 809,985 in 2012).

Between these two years, fatal accidents will go from 584 to 490, serious ones from 4,970 to 4,476, and slight ones, which are the most numerous (around 550,000 per year), will also undergo a small decline.

"The decreasing trend is sharper among serious and fatal in itinere accidents, which will decline by 66.12% and 75.50% respectively by the end of 2012", María del Carmen Carnero and Diego José Pedregal, the authors of the study, tell SINC.

The researchers say that these positive results "are a reflection of the actions taken to reduce the number of traffic accidents, as well as to involve the media in consolidating and developing the culture of prevention".

Spanish Occupational Safety and Health Strategy

According to the authors, these forecasts can be used to show the short-term efficiency of the Spanish Occupational Safety and Health Strategy (2007-2012). The objectives of this programme are to reduce the occupational accident rate to bring [Spain](#) in line with average levels for the European Union and continuously improve the levels of health and safety at work.

For years such as 2008, the model does not show this strategy to have been effective yet, but it is for the 2010-2012 period. "However, the positive data must be taken with caution, because these must be compensated by the decline in employment in the country in sectors which commonly hire temporary workers, immigrants or subcontractors, such as the construction sector", warn Carnero and Pedregal.

To prove that the good results are being maintained "we need a new evaluation of the Strategy when there are real data on the number of accidents in 2011 and 2012, and particularly when the activity level in all sectors returns to average stable levels once the current economic crisis is over", the researchers conclude.

More information: María del Carmen Carnero y Diego José Pedregal. "Modelling and forecasting occupational accidents of different severity levels in Spain". Reliability Engineering and System Safety. Reliability Engineering & System Safety 95 (11): 1134-1141, noviembre de 2010. [Doi:10.1016/j.res.2010.07.003](https://doi.org/10.1016/j.res.2010.07.003)

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