An Examination of Crash Severity Differences Between Male and Female Drivers, Using Logistic Regression Model

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Abstract

One person in every 2539 people gets killed and one in every 253 suffers injuries due to driving crashes each year in Iran. Such that driving incidents are second rank factor of death and the first rank reason for lost lifetimes in this country. 60% of total incidents which lead to deaths or injuries are actually driving incidents in Iran. That is while the same ratio is only 25% worldwide average. In this article, we report a probabilistic relationship between vehicle drivers' gender and severity of the accidents. The model accuracy rate is more than 91%. Coefficient values show that if an crash happens and all other variables are under control, the probability of suffering injuries for a man is 1.597 times more than for a woman (1.40 – 1.79, 99% CI) in comparison with the case that the person does not get injured at all. Similarly, the probability of death for a man is 1.462 times higher than for a woman (1.13-1.79, 90% CI) again in comparison with case of no injury at all.

Keywords: Gender, Road Crashes, Crash Severity, Logistic Regression.

1. Introduction

Taking into account the 6,342,000 population of the world in 2004, one person in every 5,285 dies and one in every 127 people suffers injuries due to driving incidents each year. These figures are 2,539 and 253 respectively (Pakgohar, 2012). Total yearly direct and indirect costs imposed by driving crashes amount to 180,000 billion Rials. This estimate cost amount is equal to 6.23% of GDP of the country in 2007. Since the GDP growth rate was 6.7% that year it can be concluded that driving crashes cost swallows almost all the growth of GDP in Iran. A statistical report from Health Ministry shows that driving crash is the second rank cause of death and first rank cause of lost lifetime in Iran (average world statistics show this factor in rank nine). 60% of total incidents which cause death or injury in this country are actually driving incidents, while worldwide average is only 25% (Pourmoalem and Ghorbani, 2011). Humans are different in terms of physical, psychological, social, and recognition abilities. This is true in driving as well; Such that people with higher sensory skills, lower reaction time, and higher precision are more successful in driving. Sensation seeking is a personal characteristic which influences peoples driving behavior. The person in this case tends to experience new things and risks for them. Males and females are different in this sense (Soori, 2005). Significant differences have been observed in other traits like intelligent cognition and sensation (Esmaily, 2010).

This research addresses the effect of person's gender on crash severity. Binary logistic regression method is used in this research to tackle this job. The level of probability for occurrence of some situation can be determined using this specific method.

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