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Traffic Safety: Injuries and Fatalities in the US and the World

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Traffic collisions with ensuing injuries and fatalities cause major human and economic sufferings across the world. About 1.24 million people die each year as a result of road traffic crashes [1]. The situation is improving gradually over-time. Based on a 2013 study by The International Traffic Safety Data and Analysis Group (IRTAD), which representing 32 relatively developed countries, traffic fatalities for participating countries in aggregate decreased by 7.9% from 2010. There is a major disparity of traffic fatalities between the rich and poor countries though. About 90% of casualties occur in low- and middle-income countries, although they tend to be less mobilized [2].

Within the European Union, 25,845 people were killed in the 28 country union as a consequence of road collisions. More than 203, 500 people were recorded as seriously injured in the 23 EU countries that make distinctions between seriously and slightly injuries in 2014 [3]. Granted the differences in historical, economic, social conditions, they represent better safety performance relative to that of the United States.

A nation on wheel, the United States is arguably the most motorized country in the world with more than a quarter of billion registered motor vehicles [4]. The United States has also more than its share in traffic safety problems, as measured either by total number of collisions, injuries or fatalities, or rates in terms of per 100 Million Vehicle Miles Traveled or per million of registered vehicles [5]. In 2013, 32,719 people died and an estimated 2.31 million people were injured in motor vehicle traffic crashes in the country, based on the NHTSA's National Automotive Sampling System and General Estimates System [4]. The estimated economic costs

of motor vehicle crashes in 2010 totaled \$242 billion, which is equivalent to approximately \$784 for every person in the country and 1.6 percent of the U.S. Gross Domestic Product [6].

Factors contributing to traffic collisions and injuries are plentiful and often intermingled. The key individual factors include speeding, driving under influence of alcohol and/or drugs, other reckless or distracted driving, non-use of safety equipment such as seat belts, fatigues, inexperience, weather, as well as adverse road and vehicle quality and condition. For instance, alcohol-impaired-driving fatalities defined as a fatality in a crash involving a driver or motorcyclist with a blood alcohol concentration of 0.08 grams per deciliter or higher, account for 31 percent of 2013 overall fatalities in the US [7]. The severities of the injuries could have been reduced substantially, had more people used safety belts. Among fatally injured passenger vehicle occupants, 49% of those killed in 2013 did not wear proper constraints, contributing substantially to the total fatalities in the country [7].

Traffic safety in the US is improving along with the rest of the world. In the United States, the fatality rate per 100 million VMT decreased to 1.09 in 2013, the historic low, compared to the rate of 1.44 per 100 million VMT 10 years ago in 2004, representing a reduction of 24 percent reduction in the decade. The injury rate also declined along with the fatality rate. Injury rate per 100 million VMT decreased from 94 in 2004 to 77 in 2013, a reduction of 18 percent in the same ten year time period [8]. This reflects a continuation of a long term trend in traffic injuries and fatalities. Over the past half century, the fatality rate has declined about 80 percent, from

5.39 per 100 million VMT in 1964 [7].

Remarkably, reductions in elder motorcyclist and in younger driver fatalities contributed to most recent changes in fatalities in the United States. Compared to 2012, 190 fewer fatalities for motorist in the age group of 50 to 69 occurred in 2013, representing 60% of the total deduction for motorcyclist fatalities. The decrease of 358 fewer young drivers involved in fatal crashes in 2013 compared to the previous year makes up 33 percent of total decrease in fatalities of all drivers involved [7].

Notwithstanding, traffic collisions, injuries and fatalities are still one of the most significant public health problem challenging policy makers and safety institutions over the world. Not only resulting in human suffering, traffic collisions have significant economic impacts to individuals, families and society at large. Based on US department of transportation, the statistical life of a human being is assessed as \$9.2 million [9]. Multiply by the number of fatalities in 2013, the total human loss, considering fatality only, costs the US society of \$30.1 billion, not even considering the economic impact to hospitals, insurance, the court, highway and vehicle repairs, time-loss to all people involved, etc. etc.

To meet the challenge, diverse effort, including but not limited to, the traditional four Es: Engineering, Emergency response, Enforcement and regulation, and Education and information, have been implemented [10]. New systems, vehicles and advanced technologies are constantly been added to the toolbox to combat traffic collisions. The newly developed self-driving vehicles for instance is intriguing, although many hurdles still need to be overcome before it can demonstrate reliably safety impacts, positive or negative, on road safety and to public health in general.

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