



## Road Traffic Accident Analysis and Identification of Black Spot Locations on Highway

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### Abstract

Road safety is the main problem in developing countries. Every year, millions of people die in road traffic accidents, resulting in huge losses of humankind and the economy. This study focuses on the road traffic accident analysis and identification of black spots on the Lahore-Islamabad Highway M-2. Official data of road traffic accidents were collected from National Highway and Highway Police (NH & MP) Pakistan. The data was digitized on MS Excel and Origin Pro. The accident Point weightage (APW) method was employed to identify the black spots and rank of the top ten black spots. The analysis shows that the trend of road traffic accidents on M-2 was characterized by a high rate of fatal accidents of 35.3%. Human errors account for 66.8% as the major contributing factors in road traffic accidents, while vehicle errors (25.6%) and environmental factors (7.6%) were secondary and tertiary contributing factors. The main causes of road traffic accidents were the dozing on the wheel (27.9%), the careless driving (24.6%), tyre burst (11.7%), and the brakes failure (7.4%). Kallar Kahar (Salt Range) was identified as a black spot (223 km, 224 km, 225 km, 229 km, and 234 km) due to vehicle brake failure. The human error was a major contributory factor in road traffic accidents, therefore public awareness campaign on road safety is inevitable and use of the dozen alarm to overcome dozing on the wheel.

**Keywords:** Road Traffic Collisions; Highway; Black Spots; Safety; Fatal; Injuries; Collision Point Weightage.

### 1. Introduction

Road traffic collisions, and specifically highway-vehicle collisions, cost the lives of roughly one and a quarter million people worldwide every year. Furthermore, highway-traffic injuries are globally the primary cause of death among people of 15 to 29 years old with over three million deaths [1]. Approximately 1.3 million people die each year due to road collisions and 50 million people injured around the world [2]. From a policy and engineering viewpoint, maybe the most stimulating element of these numbers is their perseverance and the incapability of advanced vehicle safety features, advances in highway design, and various security countermeasures policies to extremely reduce these numbers [3]. It is estimated that the total number of casualties resulting from road collisions will increase by about 65% between 2000 and 2020. In developing and underdeveloped republics, this number is expected to be 80% [4]. The economic loss is around US \$ 65 billion, while in high-income countries it is around the US \$ 518 billion a year in developing countries [5]. The injuries caused by road collisions would show an increase in value. By 2030, it will become the fifth-largest source of mortality and, in addition to the concerns of middle-income and low-income

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