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Study of Accident Control System in Automobile in India

Ugale V. J.¹, Pagar S. S.², Gade S. D.³, Shirsath S. D.⁴, Prof. More R. M.⁵
^{1,2,3,4,5}Mechanical engineering department, SND College of engineering &RC, Yeola

Abstract: *In this paper we studied that in every year number of accident in India due to not using safety precautions like don't drink and drive, not wearing seatbelt, not using vehicles in proper maintenance, etc. In India one death every four minute due to road accident, the major problem for accident is not properly wearing seat belt, hence in this paper we studied on how to find out the solution to overcome this problem.*

Keywords: *Accident, causes, survey, control system, driver safety.*

I. INTRODUCTION

In present in India 210 million vehicles in that 154.3 million two wheelers, 28.6 million car, jeeps and taxis, 2 million buses, 9.3 million goods vehicles, 15.8 million tractors and three wheelers, This data up to 31 march 2016. India was the 6th largest motor vehicle /car manufacturer in the world in 2016. In 2015-16 (March – April) Indian auto industry produce a record 23.4 million motor vehicles in including 3.22 million passenger vehicles, the total turnover of the auto manufacturing industry amounted to USD72.39 billion in 2014-15.

Road accident have emerged as a major public health problem globally almost 5 lakh accident occurred in last year. The overall road accident increased by 2.5 percent from 4,89,400 in 2014 to 5,01,423 in 2015. The survey of road accident in 2015 shows that about 1374 accident and 400 death in every day on Indian road it is transform into 57 accident on road and loss of 17 lives on an average per hour in India. Almost 54.1 percent of people killed in a road accident were in the 15 to 34 year age group in 2015. In India Maharashtra have second largest state in road accident (63805).

Few studies that have survey data to understand the efficacy of seat belt in the country. It is not mandatory to wear rear seat belt but compulsory to wear the front drivers and passenger seat belts. According to WHO (world health organisation) report, our country has the number of road death in whole world, 1,05,725 deaths in 4,00,000 accidents, followed by China (96,611), the USA (42,644) and Russia (35,971). Of these deaths, 25 percent can be avoided by wearing seat belt. As per report of 'road accident in India - 2015', released by ministry of road transport and highways about 1.5 lakh Indians died on the road in 2015 and the total number of accident crossed the 5 lakh mark.

A. Causes of Accident

There are many causes of accident in that

- 1) **Over Speeding** : We see them on the highway. Lots of drivers ignore the speed limit and drive 10, 20 and sometimes 30 mph over the limit. Over speed kills, and traveling above the speed limit is an easy way to cause a car accident.
- 2) **Drunk Drive**: When we drink, we lose the ability to concentration and function properly and it is very dangerous when we operating the vehicle. Driving under the impact of alcohol causes accident every day, even when they are one of the top cause that can be avoided.
- 3) **Running Stop Signs**: Stop sign should never be unnoticed, but when they are, serious accident are often result. Every year, thousands of accident occur because one driver ran a stop sign. We should always look both ways when proceeding through a stop sign.
- 4) **Wrong Turns**: To prevent accident, always looks for signs and obey the proper right of way before we make a turn.
- 5) **Fog**: Fog is not the most common weather occurrence and that is good news for accident statistics. Avoid accident by using vehicle head light and never our high beams when driving in the fog.
- 6) **Street Racing**: With turbo engine and nitrous oxide booster's cars often reach very high speeds during street race, making any causing accident more dangerous and unlikely to yield any survivors.
- 7) **Not Wearing Seat Belt**: If driver not wear seat belt while driving there is much more chances of accident. [1]

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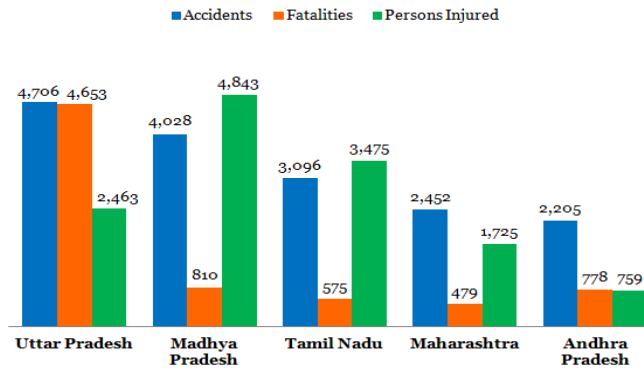


Fig. 1 Five states with highest drunk and drive accident. [2]

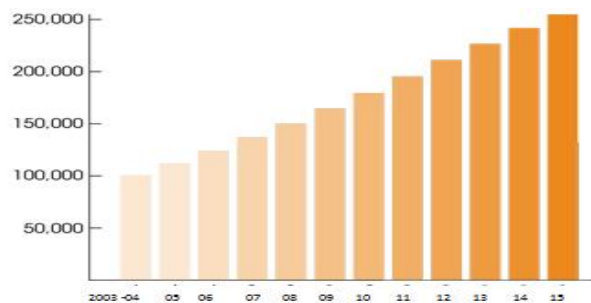


Fig. 2 Cumulative lives saved by wearing seatbelt [3]

II. ACCIDENT CONTROL SYSTEM

A. ABS (Antilock Braking System)

Antilock braking system use to maintain better control of the car under hard braking. It was developed in 1929 for use on air craft. Maximum braking effort, such as that required in an emergency stock is developed at the point at which the wheel has just started to lock up & skid .ABS is now used to just about every new car and is used to help stability while cornering and as a crude aid to traction too as engineers start to think laterally about its advantages in situations other than braking. ABS can help us to corner more quickly and more safely. ABS system used in Hyundai, Maruti-Suzuki and Toyota cars. [4]

B. Vehicle Detection System

The vehicle detection system uses 3-axis magneto-resistive wireless sensors to detect vehicle presence or movement, this system is fast & simple connection with no wires, ducting or trenching, this system have ultra -low power communications protocol with reliable two way communication with access point.

Wi Mag is a modern vehicle detection system, it is an alternative vehicle detection system it is a cost effective vehicle detection system it uses small battery powered magnetometer, integrated with road surface, to detect vehicle and communicate detection events to a host controller without the need for extensive cabling or duct works. [5]

C. Air Bags System

An airbag is a vehicle safety device & is an occupant restrained system. The airbag is design to inflate extremely rapidly then quickly deflate during a collision or impact with a surface or rapid sudden deceleration. The air bag consist of airbag cushion, a flexible fabric bag, inflation module and impact sensor. The main purpose of airbag is to provide the occupants a soft cushioning and restraint during a crash to prevent any impact or injuries between the flailing occupant and the interior of the vehicle.

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It can provides an energy absorbing surface between driver and steering wheel, instrumental panel, passenger, structural body frame pillars, headliner and windshield.[6]

D. Automatic Speed Control and Accident Avoidance of Vehicle Using Multi Sensor

This system can work with the help of eye blink sensor and ultrasonic sensor .In running vehicle any obstacle is comes in front of depends upon distance automatically control the speed of vehicle. When the driver is sleeping /drowse position the eye blink sensor detect the eye blink, if the driver's eye closed more than 30sec vehicle stop automatically and give indication to the driver, the ultrasonic sensor nonstop sends signals & monitor any obstacle in front of car.[7]

E. Forward Collision Warning system

This system is also known as collision avoidance system, pre-crash system, collision mitigating system. Forward collision warning system radar (all weather) and same time it uses laser (LIDAR) and camera (using image credit) to detect an imminent crash. In this system GPS sensor can detect fixed hazards like approaching stop signs through a location database.

When the detection is done this system provide a warning to driver when there is an imminent collision or tack action automatically without any driver input (by breaking or steering or both).collision avoidance by breaking is suitable at low vehical speed (e.g. below 50km/hr.) while crash escaping by steering is suitable at higher vehical speed. Car with crash escaping may also be armed with 'adaptive cruise control', and use the same forward observing sensor. [8]

F. Smart Night Vision System (SNVS)

In driving at night or in full rain the driver's visible range will be limited and also the light revealing range will be limited to avoid the driver from clearly observing any ordinary along the wayside or the person is in restoring his out of condition car the SNVS will show the front road status on the LCD screen of the car audio system by using ultraviolet camera to monitor the road condition to present to the driver a complete information of the front road condition to significantly reduce the likely incidences of accidents.

III. CONCLUSIONS

From the above study of accident control system we conclude that

Road accident is causes by various reasons.

But the accident occurs due to not wearing seatbelt is more comparison to other causes, hence we need to develop a mechanism which can reduces the accident by the compulsory wearing a seatbelt.

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