

# ACCIDENTS WHILE LANE CHANGING OF AUTOMOBILE

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## ABSTRACT

Accidents involving lane changes happen when a driver of a car switches lanes without taking the necessary precautions. These mishaps could cause critical injuries, property damage and even fatalities. This abstract gives a quick review of the causes, effects, and preventative measures for lane change accidents in this situation. Driver mistake, inattentive driving, and insufficient communication between drivers are the main factors contributing to lane change collisions. These mishaps can have serious repercussions, including property damage, physical harm, death, and psychological distress. Drivers should use defensive driving techniques, be aware of their blind zones, indicate when changing lanes, and abstain from driving while distracted to prevent these collisions. In addition, by enhancing infrastructure and road design, enforcing stiffer fines for irresponsible driving, and fostering public awareness campaigns, authorities can significantly contribute to the decline in the number of lane change accidents. In general, mitigating lane change collisions necessitates a multifaceted strategy involving motorists, decision-makers, and other stakeholders.

**KEYWORDS:** Lane change, vehicle merging, driver error, preventative measures, blind zones.

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## I. INTRODUCTION

For those who operate motor vehicles, changing lanes can be a challenging operation. Inadequate lane change behaviour by drivers can result in accidents and delays in traffic. Lane change collisions make up 4–10% of all traffic collisions. The kind, positioning, speed, acceleration, and deceleration of obstacle vehicles in the current lane and the target lane have an impact on safety. The vehicle's lane change assist system must determine the actual distance between the lane change vehicle and any obstacle vehicles before making decisions and providing early warning by comparing that distance to the minimum safety distance in order to ensure safe lane

changes and prevent angle accidents. Almost 90% of traffic accidents are thought to be the result of human mistake. The association between risky driving behaviour and the frequency of traffic crashes has been the subject of numerous research. The majority of these studies identified the most dangerous driving practises that result in significant crashes as speeding, tailgating, drinking while driving, using a hand-held phone, and failing to obey traffic signs or signals. The researchers, however, have not paid as much attention to the drivers' risky lane switching habits. Unsafe lane changes are regarded as the main contributor to serious crashes in the Emirate of Abu Dhabi (AD), the capital of the United Arab

Emirates (UAE) (That is, at least one person was hurt or killed in every crash). It is important to note that the population of drivers in AD has a distinctive makeup, with more than 200 different nationalities residing there. This reality forces the traffic authorities to make significant changes in

how they handle various driving standards and backgrounds in the culture of road safety. Lane change-related crashes are those that happen when the at-fault drivers suddenly change lanes, according to the crash investigation report.

In this example, "sudden lane changing" is listed as the crash reason in the crash report.

In general, little is known regarding lane change related collisions, particularly in the Middle Eastern nations where information about traffic safety is not frequently disseminated. Without investigating the causes of such behaviour, it is common practise in crash reports to state that the crash was caused by the at fault drivers' rapid lane-changing behaviour (in the crash cause item). Consequently, the primary goals of this study are to analyse drivers' attitudes and perceptions concerning lane change manoeuvres as well as factors influencing the likelihood of lane change crashes. Every hour, 17 people are killed on Indian roadways due to several factors like poor infrastructure and lack of discipline. In contrast to India, the average number of traffic offences for which a person is held responsible is higher in western nations. For instance, we have never heard of a traffic officer fining someone for changing lanes in a prohibited location. The USA and Australia both have fee structures and penalty points for lane changes in restricted areas with proper solid and broken line markers.

Roads are divided into lanes by broken lines. When the lines are broken, commuters are free to switch lanes, but when the lines are solid, they must stay in their designated lane. Overtaking and lane switching are therefore discouraged or forbidden on roads with solid lines. If these solid lines were strategically used to reflect multiple actual highways, it would drastically reduce lane changes and increase lane discipline, which would reduce accidents and improve traffic flow. These distinct lines will solve collisions brought on by lane switching and overtaking. Along with marking with solid lines, the government should also take action by putting up visible signs that prohibit lane changes. Most people still don't understand this idea, so the

government must take great care to inform them about lane discipline and the many types of lanes.

## II. RELATED WORK

The following are some frequent reasons for lane change mishaps:

### A. *Driving while distracted:*

When motorists are preoccupied with their phones, GPS units, or other activities, they may fail to see other cars in their vicinity or to check their blind areas before changing lanes.



### B. *Speeding:*

Drivers who drive too quickly may not have enough time to respond to other road users, particularly when changing lanes.



### C. *Ineffective lane-change signalling:*

When drivers fail to express their intentions to change lanes or do so too late, it can

confuse other drivers and result in collisions.

Protect yourself—help others



#### D. Driving under the influence:

Alcohol can impair a person's ability to make wise decisions and react quickly to shifting road situations.



Almost all significant automakers now offer devices that help drivers change lanes. Ford, Mercedes-Benz, Jaguar, Peugeot, Nissan/Infiniti, and Volvo provide "Blind Spot Warning" systems. Volkswagen, BMW, Audi, Mazda, and Lane Change Warning systems are all available. To show information to the driver, all automobile manufacturers utilize an optical display in or next to the external mirrors. The majority of automakers employ radar sensors that are mounted at the back of the car. Only a few of the systems provide two-level, increasing driver information. It is typical for the type of escalation (tactile, acoustic, optical, or lateral guidance intervention) to vary amongst vehicle manufacturers. The lane change assistants described above already have a sizable amount of performance capacity. All of these technologies do, however, have inherent limitations, which the automakers must make drivers aware of, for instance, in the owner's manual.

### III. PROPOSED WORK:

#### RECOGNIZE THE HAZARDS

##### 1. ENVIRONMENT:

More traffic on the road makes lane changes more difficult. The likelihood of a lane-change crash increases in construction zones where lanes are restricted and traffic is forced to combine. In addition, unexpected lane changes could be necessary due to obstructions in the road, including parked cars that block your lane.

##### 2. EQUIPMENT:

The front, back, and sides of tractor-trailers all have significant blind spots. The driver's visibility is compromised by damaged, missing, or dysfunctional equipment like turn signals, mirrors etc. Also, as a result of vibration from driving, mirrors fall out of alignment and require adjusting.

##### 3. PERSONAL ACTIONS:

Drivers who often change lanes increase their risk of being in an accident. The perception and reaction times of a driver are compromised by speeding and inadequate following distances. The risk of an accident is also increased by inadequate planning and neglecting to employ a turn signal. Always be vigilant and aware of your surroundings when driving in order to avoid lane change collisions. Before changing lanes, switch on your turn signal far in ahead, and make sure to check your blind zones. Moreover, always adhere to posted speed limits, and never drive while intoxicated.



It's crucial to maintain composure and, if required, ask for emergency assistance in the event of a lane change collision. Make a note of any pertinent information about the collision, such as the time, location, and weather conditions, and exchange

contact and insurance information with the other driver involved. As soon as you can, get in touch with your insurance company to report the mishap and start the claims procedure.

#### IV. CONCLUSION

Drivers must divide their attention when performing the lane-change operation between the forward roadway, their surroundings, steering, controlling the vehicle's speed, and utilising the turn signal. When forced to switch lanes, drivers could perform worse in one or a number of these duties. Our investigation discovered that several drivers did not switch lanes when using their turn signals. This was especially true when vehicles veered into the opposite lane to escape a potential collision. According to these statistics, turn-signal use declines as driver time pressure to switch lanes rises. Also, it is clear from the statistics that several drivers did not want to indicate before changing lanes. In other words, turn signals were not a good indicator of lane changes that resulted in collisions or near-collisions.

#### **THE DEFENSE IS KNOWN**

##### **A PRE-TRIP INSPECTION SHOULD BE DONE:**

Do a complete pre-trip inspection. Every time you stop or as needed, clean the windows, lights, mirrors, and reflectors. Before each journey, take the time to precisely align the mirrors.

##### **PLAN AHEAD:**

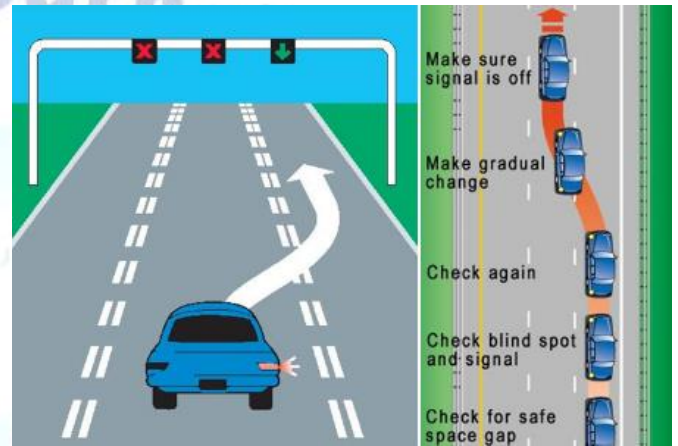
Before leaving, programme the route into your GPS. Be cautious of roadwork, lane restrictions, etc.

##### **CHANGE LANES SAFELY AND LEGALLY:**

- Refrain from using distractions like eating, drinking, chatting on the phone, or texting while driving.
- As much as you can, stay in one lane.
- Keep a safe following distance and pay attention to any slowed-down traffic up ahead.
- Keep an eye on the blind zones surrounding the truck by taking frequent, fleeting glances in the mirrors and windows.

- Know your state's "Move Over" regulations and whether you need to change lanes to make room for emergency vehicles parked on the side of the road.
- To let other drivers know that you intend to change lanes, use the turn signal well in advance.
- Avoid abrupt lane changes; instead, lean and look to be sure no other vehicle is in the tractor's right-

front blind zone. Gradually merge into the lane next to you.



- Enter the exit or turn lane far enough ahead. If you take the wrong exit or turn, keep driving, take the next exit or turn, and then turn around.

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