

# **Motorcyclist Lane-splitting/filtering: An Overview of the Literature 2010 - 2020 March, 2021**

## **Introduction**

SMARTER has maintained a lane-splitting research section since June, 2013. In early March, 2021 Montana passed a lane-filtering law that resulted in conversations on motorcyclist social media sites. The conversations were widely varied; many referring to Montana as the third U.S. state to legalize lane-splitting and some praising the move as a step forward for motorcyclist safety. As of the writing of this overview, California has guidelines for lane-splitting and Utah and Montana have laws/rules for lane-filtering. State regulations as of March 2021 are here: <https://smarter-usa.org/wp-content/uploads/2021/03/State-regulations.pdf>

SMARTER, As a motorcyclist safety advocacy association, is interested in safety related questions about this practice. Lane-splitting/filtering may be beneficial to motorcyclists and/or overall traffic regarding flow/movement but the big question riders want an answer to is:

*“Which is higher risk - staying in my lane or splitting/filtering?”*

An important secondary question might be:

*“How does the risk change by setting (urban/rural, number of lanes, my speed and speed of the surrounding traffic)?”*

In this overview, we will review the literature to help find answers to these safety questions. This overview will not address other possible benefits of the practice.

## **Background**

A quality review of the literature titled *Motorcycle Lane-Sharing Literature Review* was completed in 2010 by the Oregon Department of Transportation Research Section (Oregon DOT Review). The Oregon DOT review examined the use of lane-sharing nationally and internationally. It included discussions on motorcycle and driver (auto) safety and the potential benefits of lane-sharing.

## **The Oregon DOT Review**

The complete Oregon DOT review is available here: <https://smarter-usa.org/wp-content/uploads/2017/06/9.-motorcycle-lane-sharing-literature-review-oregon-2010.pdf>.

We recommend reading this review to provide a foundation for the information shared in this 2010 - 2020 overview.

Conclusions of the Oregon DOT Review include:

- \* *Research on the topic is limited*
- \* *No studies were found that primarily focused on the benefits or safety concerns of the practice.*

- \* *Relevant to the safety implications of lane-sharing, motorcycle crash causation studies provided the most direct information on lane-sharing.*
- \* *Studies, such as the 1981 Hurt report and the 2009 MAIDS report, considered lane-sharing as a causation factor.*
- \* *Little information currently exists; most of which is part of large crash studies where lane-sharing is not the primary focus.*

## **Literature since 2010**

SMARTER examined thirteen (13) reports in preparation for this overview. As of March 2021, all of the reports are posted on our website at <https://smarter-usa.org/research/lane-splitting/> so we will not provide specific citations but have listed the report titles at the end of this document.

## **Possible answers to our risk questions**

Only three (3) of the 13 reports examined for this overview shed light on our risk questions. One (1) of these studies was conducted in California (published 2013) and two (2) were conducted in France (published 2016 & 2020). Let's look at these in chronological order.

### **2013 - Lane splitting on California Freeways**

This study examined 2011 exposure data collected by monitoring freeway video cameras and simultaneous speed data at the camera location. It also examines 1976-77 data from the "Hurt Study" regarding motorcyclists who crashed while lane-splitting. It compares the frequency of lane splitting motorcycles observed (2011) in moderate or heavy traffic to the frequency of motorcycles that crashed (1976-77) while splitting lanes. The report concludes that lane-splitting contributes little to the population of motorcycle accidents and eliminating a ban on lane splitting is unlikely to lead to an increase in motorcycle accidents. In the discussion the author states: *"Lane splitting can appear to be a risky maneuver, but the data presented here suggest that riders who split lanes, at least on freeways, are **significantly less** likely to be involved in a crash than riders who maintain a normal lane position. To put it more simply, the data suggest that splitting lanes, may be safer than NOT splitting lanes."* (emphasis added)

### **2016 – Powered Two-wheeler Riders' Risk of Crashes Associated with Filtering on Urban Roads**

This study targeted the specific risk question posed at the beginning of this overview: Which is higher risk - staying in my lane or splitting/filtering? The results showed that motorcycle travel while lane-filtering accounted for roughly one-fifth of all motorcycle kilometers traveled on the road sections observed. Results also showed that lane-filtering carries a nearly four-fold **increase** in crash risk compared to non-filtering motorcycle travel (i.e., riding within the designated traffic lanes). This excess risk occurred for all powered two-wheeler categories. Furthermore, no space appears to be safer than others for filtering. Riders filtering forward along the axis of the carriageway, along bus lanes or between traffic lanes (lane-splitting) all have a crash risk greater than the risk of those who do not filter. (emphasis added).

## **2020 – Inter-line Traffic Experiences (CIF) of Motorized Two-wheelers: Assessment Report**

The study was conducted in 11 French departments (counties) over a period of five years. The Centre for Studies and Expertise on Risks, Environment, Mobility and Planning (CEREMA) conducted the study. The report shows that over the five-year period, motorcycle crashes in the 11 departments where lane-splitting was allowed **increased** by 12 percent while the crash rate on roads outside the testing area decreased by 10 percent. (emphasis added)

### **Conclusion**

Substantial gains in information regarding motorcyclist and motorist attitudes and knowledge regarding lane-splitting/sharing/filtering have been made since the publication of the 2010 Oregon DOT literature review. We also have significant information regarding demographic data of California crash victims who were lane-splitting at the time of their crash.

Regarding our main question: Which is higher risk - staying in my lane or splitting/filtering? The 2013 study *Lane Splitting on California Freeways* concludes the lane-splitting contributes little to crash risk. This report discussion suggests the possibility that lane-splitting riders may be less likely to be involved in a crash. The two more recent (2016 and 2020) French studies both indicate lane-splitting significantly increases the risk of being in a crash. The 2016 study also sheds light on our secondary question, concluding that all riders filtering forward, regardless of selected path of travel, have a crash risk greater than the risk of riders who do not filter.

### **Reports reviewed**

- (1) 2011 - Lane Sharing: A Global Solution for Motorcycle Safety
- (2) 2012 - Lane Sharing as a Motorcycle Safety Practice: A Further Evaluation
- (3) 2012 - Motorcycle Lane Share Study Among California Motorcyclists and Drivers 2012
- (4) 2013 - Lane splitting on California Freeways
- (5) Motorcycle Lane-Share Study Among California motorcyclists and Drivers 2013 and Comparisons to 2012 Data
- (6) 2013 – Lane-filtering and Situation Awareness in Motorcyclist: An On-road Proof of Concept Study
- (7) 2014 – Motorcycle Lane-Share Study Among California Motorcyclists and Drivers 2014 and Comparison to 2012 and 2013 Data
- (8) 2014 – Safety Implications of lane-splitting Among California motorcyclists Involved in Collisions
- (9) 2014 – Naturalistic Study of Riders’ Behaviour in Lane-splitting Situations
- (10) 2015 – Motorcycle Lane-splitting and Safety in California
- (11) 2015 – Drivers’ Attitudes and Knowledge Regarding Motorcycle Lane-filtering Practices
- (12) 2016 – Powered Two-wheeler Riders’ Risk of Crashes Associated with Filtering on Urban Roads
- (13) 2020 – Inter-line Traffic Experiences (CIF) of Motorized Two-wheelers: Assessment Report