From: Elesawey, Mohamed TRAN:EX
To: Sengupta, Joy TRAN:EX; Timpa, Arzeena TRAN:EX
Subject: RE: Lane filtering article
Date: October 2, 2018 11:42:28 AM
Attachments: 8.Conference_Leuven_study.pdf

Hi Joy,

This "research" was presented at 8th ACEM annual conference in Belgium in 2o12. The conference is sponsored by an organization called "The Motorcycle industry in Europe". I only found the presentation but not the paper neither the report. Please let know if you need anything more specific.

Regards,

Mohamed Elesawey, Ph.D., P.Eng.

Sr. Highway Safety Engineer

Ministry of Transportation & Infrastructure
4B - 940 Blanshard Street
Victoria, BC V8W 2H3
Tel: (250) 356 - 2012

From: Sengupta, Joy TRAN:EX
Sent: October 2, 2018 11:21 AM
To: Timpa, Arzeena TRAN:EX
Cc: Elesawey, Mohamed TRAN:EX
Subject: Fwd: Lane filtering article

Hi Arzeena
Could you please track down this article for Kenedee? You may have already looked at this one.

Joy
Joy Sengupta, P. Eng.
Manager, Highway Safety
Sent from my iPhone

Begin forwarded message:

> **From:** "Ludwar, Kenedee TRAN:EX" <Kenedee.Ludwar@gov.bc.ca>
> **Date:** October 2, 2018 at 11:37:15 AM CST
> **To:** "Sengupta, Joy TRAN:EX" <Joy.Sengupta@gov.bc.ca>
> **Subject: Lane filtering article**
>
> Please have someone see if they can track down the study referenced in this article when you have some time.
> I am pretty sure we have looked at it and it focused on congestion and environmental benefits. Came through a MO office correspondence.

Innovating our mobility

L-category vehicles: smaller, lighter, more specialised




Brussels, 24.1.2012

Page 003 of 363 to/à Page 022 of 363

Withheld pursuant to/removed as

Copyright

Additional information

Isaak Yperman
Transport & Mobility Leuven
isaak@tmleuven.be
www.tmleuven.be

Stijn Vancuyck
FEBIAC
SVC@febiac.be

https://www.telegraph.co.uk/motoring/motorbikes/9272532/Why-commuting-by-motorcycle-is-good-for-everyone.html

Kenedee Ludwar, P.Eng.
Director, Traffic and Highway Safety Engineering
Ministry of Transportation and Infrastructure
Telephone: 604 527-2255
Cellular: 604 209-4010
Email: Kenedee.Ludwar@gov.bc.ca

Innovating our mobility

L-category vehicles: smaller, lighter, more specialised




Brussels, 24.1.2012

Page 026 of 363 to/à Page 045 of 363

Withheld pursuant to/removed as

Copyright

Additional information

Isaak Yperman
Transport & Mobility Leuven
isaak@tmleuven.be
www.tmleuven.be

Stijn Vancuyck
FEBIAC
SVC@febiac.be

From:	Changirwa, Shena TRAN:EX
To:	Ludwar, Kenedee TRAN:EX
Cc:	Sengupta, Joy TRAN:EX
Subject:	Lane Filtering Summary Information
Date:	November 6, 2019 12:00:01 PM
Attachments:	Lane Filtering.docx

Hi Kenedee,

I have gathered some information on the safety effects of lane filtering. I also added where it is currently legal and where legalization is being proposed/considered.

Regards,

Shena Changirwa
Engineer In Training, Highways Operations
Ministry of Transportation and Infrastructure
4B – 940 Blanshard Street
Victoria, BC V8W 2H3
Cell: (250) 893 – 4172
Office: (236) 478 – 1302

Lane Filtering Research 2019

Legal:

- Most of Europe (some restrictions in Germany), Asia, California (August 2017), and Utah (May 2019)

Proposed legalization:

- **Toronto (June 2019):** Filtering throughout the city, as well as allowing motorcycles to "use reserved lanes" in some specific areas of the city, is all up for discussion with City Council Agenda Item MM43.53. This agenda item also includes a discussion about dedicated motorcycle parking zones, and of course how to enforce that, and the tax revenue that might be generated from the ticketing.
    - Pilot project along the Richmond Street and Adelaide Street corridors which would allow motorcycles to filter between stopped vehicles, up to the stop line at controlled intersections where a stop signal is active, and only along lane boundaries that are not adjacent to any curb or pedestrian walkway, with implications for minimizing the risk of rear or front end collisions, and the overall flow of traffic.
    - A review of historical collisions in the City of Toronto suggests that less than 1% of killed or severely injured (KSI) collisions involving motorcyclists may have been avoided by permitting lane filtering. While lane filtering has been found to increase the sense of safety amongst motorcyclists, research has shown that the risk of motorcycle riders being involved in injury crashes while filtering is significantly higher than the risk for riders who do not filter14. In addition, lane filtering has been found to pose a risk to pedestrians due to motorcyclists potentially intruding into the pedestrian crosswalk.
- **Washington:** Currently has Senate Bill 5254 live in an effort to keep the lane splitting dream alive in Washington (A previous bill to legalize lane splitting had died before making any traction). There's been little to no movement on this bill to date.
- **Oregon:** House Bill 2314 is currently undergoing consideration. If approved, motorcycles would be able to travel between cars on roadways where the speed limit is 50mph or greater, and traffic is moving at 10mph or slower. It's also safe to assume that more regulations will be implemented if any form of lane splitting becomes legalized.
- **Maryland:** Currently has House Bill 917 on deck, however no real movement in the direction of legalization as of yet.
- **Connecticut:** Has Senate Bill 629 on deck, however, like Maryland, there doesn't seem to be much movement yet.

October 2018:

Evaluation of the ACT Motorcycle Lane Filtering Trial (Australia)
http://www.justice.act.gov.au/page/view/3733/title/act-lane-filtering-trial

The evaluation of powered two-wheeler (PTW) crashes compared the two-year trial period with the two-year period immediately preceding the lane filtering trial. This analysis revealed:

- There was no change in the overall crash rates for PTWs (or other road users). Across both periods, there were approximately 23 PTW crashes per month.
- Most PTW crashes involved multiple vehicles, usually a PTW and a non-PTW vehicle (e.g., motorcycle and a car). The most common crash type involved two vehicles travelling in the same direction. This category includes all crash types that were hypothesised to be affected by lane filtering, including rear end, side swipe and lane change crashes.
- There was no change in the rate or severity of rear end crashes involving PTWs during the lane filtering trial. Rear end crashes account for over 25% of all PTW crashes, making them one of the most common PTW crash types. However, PTWs are significantly less likely to be involved in rear end crashes than other vehicles, as rear end crashes comprise approximately 44% of all crashes for non-PTW vehicles.
- There was a significant increase in the rate of side swipe crashes, which have been identified as a proxy for lane filtering crashes. Specifically, the rate of PTW side swipe crashes increased from 0.58 per month (SD = 0.58) during the pre-trial period, to 1.38 per month (SD = 1.41) during the lane filtering trial. This increase appears to be restricted to property damage only crashes, however, as there was no increase in casualties resulting from side swipe crashes.
- There was no change in the rate of lane change crashes; however, relatively few lane change crashes occurred (on average 0.3/month during the lane filtering trial and 0.2/month during the pre-trial period). There was a slight reduction in the proportion of PTW lane change crashes that involved casualties.

2016:

Clabaux N, Fournier J-Y, Michel JE (2016). **Powered two wheeler riders' risk of crashes associated with filtering on urban roads.** *Traffic Injury Prevention.* 18:182-187.

ABSTRACT

Objective: The objective of this study is to estimate the crash risk per kilometer traveled by powered two wheeler (PTW) riders filtering through traffic on urban roads.
Methods: Using the traffic injury crashes recorded by the police over a period of 3 years on 14 sections of urban roads in the city of Marseille, France, and a campaign of observations of PTWs, the crash risk per kilometer traveled by PTWs filtering was estimated and compared to the risk of PTWs that did not filter.
Results: The results show that the risk of PTW riders being involved in injury crashes while filtering is significantly higher than the risk for riders who do not filter. For the 14 sections studied, it is 3.94 times greater (95% confidence interval [CI], 2.63, 5.89). This excess risk occurred for all PTW categories. Furthermore, no space appears to be safer than the 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.
Conclusions: All measures limiting the practice of filtering by PTWs on urban roads would probably contribute to improving the safety of their users.

2013:

Mulvihill CM, Salmon PM, Filtness AJ, Lenné MG, Walker GH, Cornelissen M, Young KL (2013). **Lane-filtering and situation awareness in motorcyclists: an on-road proof of concept study.** In *Proceedings of the 2013 Australasian Road Safety Research, Policing & Education Conference:* Brisbane, Queensland, AU. http://acrs.org.au/files/arsrpe/Paper%20114%20-%20Mulvihill%20-%20Motorcycle%20Risks%20and%20Crashes.pdf

Lane filtering and safety

The purported safety benefits of lane filtering for motorcyclists include a reduction in the risk of rear-end collisions (ACEM, 2009), and improved visibility of hazards and traffic by permitting the rider to move away from traffic (Smith, 2011). To date, however, there has been almost no systematic research to support these claims, with much of the information derived from large crash investigation studies where lane filtering is not the primary focus (Sperley & Pietz, 2010). A purported key risk associated with lane filtering is that it violates driver expectation: drivers' limited perceptual exploration of the areas in which motorcyclists filter creates a conflict that increases the likelihood of collisions between the two (Salmon, Young & Cornelissen, 2013). UK research has identified some support for this finding, in which drivers were found to have turned across the path of filtering motorcyclists as a result of a failure to notice them in traffic (Clarke, Ward, Bartle & Truman, 2004; Crundall, Clarke, Ward & Bartle, 2008; Sexton, Fletcher & Hamilton, 2004)

Lane Filtering Research 2019

Legal:

- Most of Europe (some restrictions in Germany), Asia, California (August 2017), and Utah (May 2019)

Proposed legalization:

- **Toronto (June 2019):** Filtering throughout the city, as well as allowing motorcycles to "use reserved lanes" in some specific areas of the city, is all up for discussion with City Council Agenda Item MM43.53. This agenda item also includes a discussion about dedicated motorcycle parking zones, and of course how to enforce that, and the tax revenue that might be generated from the ticketing.
    - Pilot project along the Richmond Street and Adelaide Street corridors which would allow motorcycles to filter between stopped vehicles, up to the stop line at controlled intersections where a stop signal is active, and only along lane boundaries that are not adjacent to any curb or pedestrian walkway, with implications for minimizing the risk of rear or front end collisions, and the overall flow of traffic.
    - A review of historical collisions in the City of Toronto suggests that less than 1% of killed or severely injured (KSI) collisions involving motorcyclists may have been avoided by permitting lane filtering. While lane filtering has been found to increase the sense of safety amongst motorcyclists, research has shown that the risk of motorcycle riders being involved in injury crashes while filtering is significantly higher than the risk for riders who do not filter14. In addition, lane filtering has been found to pose a risk to pedestrians due to motorcyclists potentially intruding into the pedestrian crosswalk.
- **Washington:** Currently has Senate Bill 5254 live in an effort to keep the lane splitting dream alive in Washington (A previous bill to legalize lane splitting had died before making any traction). There's been little to no movement on this bill to date.
- **Oregon:** House Bill 2314 is currently undergoing consideration. If approved, motorcycles would be able to travel between cars on roadways where the speed limit is 50mph or greater, and traffic is moving at 10mph or slower. It's also safe to assume that more regulations will be implemented if any form of lane splitting becomes legalized.
- **Maryland:** Currently has House Bill 917 on deck, however no real movement in the direction of legalization as of yet.
- **Connecticut:** Has Senate Bill 629 on deck, however, like Maryland, there doesn't seem to be much movement yet.

October 2018:

Evaluation of the ACT Motorcycle Lane Filtering Trial (Australia)
http://www.justice.act.gov.au/page/view/3733/title/act-lane-filtering-trial

The evaluation of powered two-wheeler (PTW) crashes compared the two-year trial period with the two-year period immediately preceding the lane filtering trial. This analysis revealed:

- There was no change in the overall crash rates for PTWs (or other road users). Across both periods, there were approximately 23 PTW crashes per month.
- Most PTW crashes involved multiple vehicles, usually a PTW and a non-PTW vehicle (e.g., motorcycle and a car). The most common crash type involved two vehicles travelling in the same direction. This category includes all crash types that were hypothesised to be affected by lane filtering, including rear end, side swipe and lane change crashes.
- There was no change in the rate or severity of rear end crashes involving PTWs during the lane filtering trial. Rear end crashes account for over 25% of all PTW crashes, making them one of the most common PTW crash types. However, PTWs are significantly less likely to be involved in rear end crashes than other vehicles, as rear end crashes comprise approximately 44% of all crashes for non-PTW vehicles.
- There was a significant increase in the rate of side swipe crashes, which have been identified as a proxy for lane filtering crashes. Specifically, the rate of PTW side swipe crashes increased from 0.58 per month (SD = 0.58) during the pre-trial period, to 1.38 per month (SD = 1.41) during the lane filtering trial. This increase appears to be restricted to property damage only crashes, however, as there was no increase in casualties resulting from side swipe crashes.
- There was no change in the rate of lane change crashes; however, relatively few lane change crashes occurred (on average 0.3/month during the lane filtering trial and 0.2/month during the pre-trial period). There was a slight reduction in the proportion of PTW lane change crashes that involved casualties.

2016:

Clabaux N, Fournier J-Y, Michel JE (2016). **Powered two wheeler riders' risk of crashes associated with filtering on urban roads.** *Traffic Injury Prevention.* 18:182-187.

ABSTRACT

Objective: The objective of this study is to estimate the crash risk per kilometer traveled by powered two wheeler (PTW) riders filtering through traffic on urban roads.
Methods: Using the traffic injury crashes recorded by the police over a period of 3 years on 14 sections of urban roads in the city of Marseille, France, and a campaign of observations of PTWs, the crash risk per kilometer traveled by PTWs filtering was estimated and compared to the risk of PTWs that did not filter.
Results: The results show that the risk of PTW riders being involved in injury crashes while filtering is significantly higher than the risk for riders who do not filter. For the 14 sections studied, it is 3.94 times greater (95% confidence interval [CI], 2.63, 5.89). This excess risk occurred for all PTW categories. Furthermore, no space appears to be safer than the 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.
Conclusions: All measures limiting the practice of filtering by PTWs on urban roads would probably contribute to improving the safety of their users.

2013:

Mulvihill CM, Salmon PM, Filtness AJ, Lenné MG, Walker GH, Cornelissen M, Young KL (2013). **Lane-filtering and situation awareness in motorcyclists: an on-road proof of concept study.** In *Proceedings of the 2013 Australasian Road Safety Research, Policing & Education Conference:* Brisbane, Queensland, AU. http://acrs.org.au/files/arsrpe/Paper%20114%20-%20Mulvihill%20-%20Motorcycle%20Risks%20and%20Crashes.pdf

Lane filtering and safety

The purported safety benefits of lane filtering for motorcyclists include a reduction in the risk of rear-end collisions (ACEM, 2009), and improved visibility of hazards and traffic by permitting the rider to move away from traffic (Smith, 2011). To date, however, there has been almost no systematic research to support these claims, with much of the information derived from large crash investigation studies where lane filtering is not the primary focus (Sperley & Pietz, 2010). A purported key risk associated with lane filtering is that it violates driver expectation: drivers' limited perceptual exploration of the areas in which motorcyclists filter creates a conflict that increases the likelihood of collisions between the two (Salmon, Young & Cornelissen, 2013). UK research has identified some support for this finding, in which drivers were found to have turned across the path of filtering motorcyclists as a result of a failure to notice them in traffic (Clarke, Ward, Bartle & Truman, 2004; Crundall, Clarke, Ward & Bartle, 2008; Sexton, Fletcher & Hamilton, 2004)

From: Sowers, Caitlin TRAN:EX
To: Sengupta, Joy TRAN:EX
Subject: Lane Splitting/Filtering Lit Review
Date: November 7, 2017 3:27:41 PM
Attachments: Literature Review.docx

Hi Joy,

I've attached the literature review for lane filtering/splitting. I did it in a point form/summary format for you to be able to skim quickly. Let me know if you find the document useful, or any additional information you would prefer.

Kind regards,

Caitlin Sowers, E.I.T, M.Sc.E
Highway Safety Engineering
Ministry of Transportation
(250)-387-7753

Literature Review – Lane Filtering/Lane Splitting

Australia

- Nomenclature - lane filtering refers to motorcyclists travelling less than 30km/hr (good), while lane splitting refers to faster than 30km/hr (bad)
- A two-month trial was completed in NSW in 2013
    - Offered a relatively low risk when done at 30km/hr or less
    - Improved travel times for motorcyclists over short sections of the Sydney CBD
    - Overall traffic congestion reduction was not found (relatively low number of motorcyclists)
    - Risks: pedestrian crossing (lack of predictability of riders lane filtering), buses and heavy vehicles (motorcyclists lane filtering may not be visible), inexperienced motorcyclists
- Road Transportation Legislation Amendment Regulation was added in 2014 under the Road Transport Act
    - Made lane filtering legal and lane splitting illegal
- An educational campaign was launched which included:
    - Communicate the difference between lane filtering and lane splitting
    - Communicate how lane filtering can be done safely for all users
    - Increase awareness for all road users that motorcyclists may be lane filtering
- Motorcyclists who damage other vehicles while lane filtering may be charged with:
    - Failure to have proper control of a vehicle
    - Failure to stop at the scene after a crash
    - Property damage offences if the damage is done intentionally or recklessly

Citation - New South Wales Government 2015

United States – California (Only state not prohibiting lane filtering/spitting)

- The state of California did not allow or prohibit lane filtering or lane splitting prior to August 2016
- The University of Berkley published a paper examining approximately 6,000 ,motorcyclists over a year (June 2012 – August 2013) who were involved in collisions
    - 17% collisions occurred during lane splitting
    - Overall findings indicated “lane splitting” appears to safe if traffic is moving at 50 mph or less and if motorcyclists do not exceed the speed of other vehicles by more than 15 mph

Citation - University of California Berkley 2015

- An assembly bill was passed in August 2016 to permit lane splitting guidelines to be developed by The Department of the California Highway Patrol in consultation with The Department of Motor Vehicles, The Department of Transportation, The Office of Traffic Safety, and a motorcycle organization focused on motorcyclist safety.

Citation – California Legislation 2016

A previous literature review synthesizing much of the above information here

Literature Review – Lane Filtering/Lane Splitting

Australia

- Nomenclature - lane filtering refers to motorcyclists travelling less than 30km/hr (good), while lane splitting refers to faster than 30km/hr (bad)
- A two-month trial was completed in NSW in 2013
    - Offered a relatively low risk when done at 30km/hr or less
    - Improved travel times for motorcyclists over short sections of the Sydney CBD
    - Overall traffic congestion reduction was not found (relatively low number of motorcyclists)
    - Risks: pedestrian crossing (lack of predictability of riders lane filtering), buses and heavy vehicles (motorcyclists lane filtering may not be visible), inexperienced motorcyclists
- Road Transportation Legislation Amendment Regulation was added in 2014 under the Road Transport Act
    - Made lane filtering legal and lane splitting illegal
- An educational campaign was launched which included:
    - Communicate the difference between lane filtering and lane splitting
    - Communicate how lane filtering can be done safely for all users
    - Increase awareness for all road users that motorcyclists may be lane filtering
- Motorcyclists who damage other vehicles while lane filtering may be charged with:
    - Failure to have proper control of a vehicle
    - Failure to stop at the scene after a crash
    - Property damage offences if the damage is done intentionally or recklessly

Citation - New South Wales Government 2015

United States – California (Only state not prohibiting lane filtering/spitting)

- The state of California did not allow or prohibit lane filtering or lane splitting prior to August 2016
- The University of Berkley published a paper examining approximately 6,000 ,motorcyclists over a year (June 2012 – August 2013) who were involved in collisions
    - 17% collisions occurred during lane splitting
    - Overall findings indicated “lane splitting” appears to safe if traffic is moving at 50 mph or less and if motorcyclists do not exceed the speed of other vehicles by more than 15 mph

Citation - University of California Berkley 2015

- An assembly bill was passed in August 2016 to permit lane splitting guidelines to be developed by The Department of the California Highway Patrol in consultation with The Department of Motor Vehicles, The Department of Transportation, The Office of Traffic Safety, and a motorcycle organization focused on motorcyclist safety.

Citation – California Legislation 2016

A previous literature review synthesizing much of the above information here

From:	Sowers, Caitlin TRAN:EX
To:	Ludwar, Kenedee TRAN:EX
Cc:	Sengupta, Joy TRAN:EX
Subject:	Lane Filtering
Date:	November 22, 2017 3:07:19 PM
Attachments:	Literature Review - Lane filtering.docx

Hi Kenedee,

As per our conversation today I looked into Ohio (not legal; bill rejected in 2015), and Washington (bill introduced this year and is in progress), as well as the "6 times safer argument" (based on only one year of collision data, inaccurate)

I've attached the literature review for more detail.

My thoughts are that the safety data isn't there to support the decision yet. I'm not convinced the safety benefit outweighs the risk as we discussed earlier. The best study available from Australia is only over two months, and even that study found lane filtering at a speed greater than 30 km/hr was a safety risk.

Kind regards,

Caitlin Sowers, E.I.T, M.Sc.E

Highway Safety Engineering

Ministry of Transportation

(250)-387-7753

Literature Review – Lane Filtering/Lane Splitting

Australia

- Nomenclature - lane filtering refers to motorcyclists travelling less than 30km/hr (good), while lane splitting refers to faster than 30km/hr (bad)
- A two-month trial was completed in NSW in 2013
    - Offered a relatively low risk when done at 30km/hr or less
    - Improved travel times for motorcyclists over short sections of the Sydney CBD
    - Overall traffic congestion reduction was not found (relatively low number of motorcyclists)
    - Risks: pedestrian crossing (lack of predictability of riders lane filtering), buses and heavy vehicles (motorcyclists lane filtering may not be visible), inexperienced motorcyclists
- Road Transportation Legislation Amendment Regulation was added in 2014 under the Road Transport Act
    - Made lane filtering legal and lane splitting illegal
- An educational campaign was launched which included:
    - Communicate the difference between lane filtering and lane splitting
    - Communicate how lane filtering can be done safely for all users
    - Increase awareness for all road users that motorcyclists may be lane filtering
- Motorcyclists who damage other vehicles while lane filtering may be charged with:
    - Failure to have proper control of a vehicle
    - Failure to stop at the scene after a crash
    - Property damage offences if the damage is done intentionally or recklessly

Citation - New South Wales Government 2015

United States – California (Only state not prohibiting lane filtering/spitting)

- The state of California did not allow or prohibit lane filtering or lane splitting prior to August 2016
- The University of Berkley published a paper examining approximately 6,000 ,motorcyclists over a year (June 2012 – August 2013) who were involved in collisions
    - 17% collisions occurred during lane splitting
    - Overall findings indicated “lane splitting” appears to safe if traffic is moving at 50 mph or less and if motorcyclists do not exceed the speed of other vehicles by more than 15 mph

Citation - University of California Berkley 2015

- An assembly bill was passed in August 2016 to permit lane splitting guidelines to be developed by The Department of the California Highway Patrol in consultation with The Department of Motor Vehicles, The Department of Transportation, The Office of Traffic Safety, and a motorcycle organization focused on motorcyclist safety.

Citation – California Legislation 2016

- Currently illegal in all other U.S. states

A previous literature review synthesizing much of the above information here

Ohio

- Not legal, Ohio Code states that bicyclists and motorcyclists must always remain as close to the right side of the road as possible **http://codes.ohio.gov/orc/4511.55**
- A bill was rejected by the House in May of 2015

Washington

- A bill was introduced to the Senate in January of this year, and is currently in progress, but not passed **http://app.leg.wa.gov/billsummary?BillNumber=5378&Year=2017**

Canada

- Currently illegal in all provinces

Europe and Elsewhere

- Lane filtering is legal in 25 countries (not explicitly listed)
- Lane filtering is taught in UK motorcycle licencing
- Legal in the Netherlands
- Legal in Asia
- Germany has restrictive legislation to only permit lane splitting when traffic is at a stand still

Citation - Victorian Parliamentary Road Safety Committee 2011

"6 times safer" Argument

- Origins are from MAIDS (Motorcycle Accidents In Depth Study) produced by ACEM (the European Association of Motorcycle Manufacturers) http://www.maids-study.eu/pdf/MAIDS2.pdf Table 5.7
- 5 countries and 5 regions in Europe were selected, 921 collisions (103 of which were fatalities) were investigated **over only one year**
- Pre-crash motions were identified
    - Stopped in traffic was a pre-crash motion for 26 collisions, filtering was a pre-crash motion for 4 collisions (26/4=6.5)
    - Their argument is "Lane filtering is 6 times safer comparing collisions from motorcycles stopped in traffic to motorcycles filtering"
    - One year does not provide sufficient data to infer safety results, 4 collisions is not enough to identify a safety trend

Literature Review – Lane Filtering/Lane Splitting

Australia

- Nomenclature - lane filtering refers to motorcyclists travelling less than 30km/hr (good), while lane splitting refers to faster than 30km/hr (bad)
- A two-month trial was completed in NSW in 2013
    - Offered a relatively low risk when done at 30km/hr or less
    - Improved travel times for motorcyclists over short sections of the Sydney CBD
    - Overall traffic congestion reduction was not found (relatively low number of motorcyclists)
    - Risks: pedestrian crossing (lack of predictability of riders lane filtering), buses and heavy vehicles (motorcyclists lane filtering may not be visible), inexperienced motorcyclists
- Road Transportation Legislation Amendment Regulation was added in 2014 under the Road Transport Act
    - Made lane filtering legal and lane splitting illegal
- An educational campaign was launched which included:
    - Communicate the difference between lane filtering and lane splitting
    - Communicate how lane filtering can be done safely for all users
    - Increase awareness for all road users that motorcyclists may be lane filtering
- Motorcyclists who damage other vehicles while lane filtering may be charged with:
    - Failure to have proper control of a vehicle
    - Failure to stop at the scene after a crash
    - Property damage offences if the damage is done intentionally or recklessly

Citation - New South Wales Government 2015

United States – California (Only state not prohibiting lane filtering/spitting)

- The state of California did not allow or prohibit lane filtering or lane splitting prior to August 2016
- The University of Berkley published a paper examining approximately 6,000 ,motorcyclists over a year (June 2012 – August 2013) who were involved in collisions
    - 17% collisions occurred during lane splitting
    - Overall findings indicated “lane splitting” appears to safe if traffic is moving at 50 mph or less and if motorcyclists do not exceed the speed of other vehicles by more than 15 mph

Citation - University of California Berkley 2015

- An assembly bill was passed in August 2016 to permit lane splitting guidelines to be developed by The Department of the California Highway Patrol in consultation with The Department of Motor Vehicles, The Department of Transportation, The Office of Traffic Safety, and a motorcycle organization focused on motorcyclist safety.

Citation – California Legislation 2016

- Currently illegal in all other U.S. states

A previous literature review synthesizing much of the above information here

Ohio

- Not legal, Ohio Code states that bicyclists and motorcyclists must always remain as close to the right side of the road as possible **http://codes.ohio.gov/orc/4511.55**
- A bill was rejected by the House in May of 2015

Washington

- A bill was introduced to the Senate in January of this year, and is currently in progress, but not passed **http://app.leg.wa.gov/billsummary?BillNumber=5378&Year=2017**

Canada

- Currently illegal in all provinces

Europe and Elsewhere

- Lane filtering is legal in 25 countries (not explicitly listed)
- Lane filtering is taught in UK motorcycle licencing
- Legal in the Netherlands
- Legal in Asia
- Germany has restrictive legislation to only permit lane splitting when traffic is at a stand still

Citation - Victorian Parliamentary Road Safety Committee 2011

"6 times safer" Argument

- Origins are from MAIDS (Motorcycle Accidents In Depth Study) produced by ACEM (the European Association of Motorcycle Manufacturers) http://www.maids-study.eu/pdf/MAIDS2.pdf Table 5.7
- 5 countries and 5 regions in Europe were selected, 921 collisions (103 of which were fatalities) were investigated **over only one year**
- Pre-crash motions were identified
    - Stopped in traffic was a pre-crash motion for 26 collisions, filtering was a pre-crash motion for 4 collisions (26/4=6.5)
    - Their argument is "Lane filtering is 6 times safer comparing collisions from motorcycles stopped in traffic to motorcycles filtering"
    - One year does not provide sufficient data to infer safety results, 4 collisions is not enough to identify a safety trend

In-depth investigations of accidents involving powered two wheelers

Final Report
2.0

Avenue de la Joyeuse Entrée 1 – 1040 Brussels
tel. + 32 (2) 230 97 32 – acem@acem.eu

Page 065 of 363 to/à Page 242 of 363

Withheld pursuant to/removed as

Copyright

MOTORCYCLE LANE-SHARING

Literature Review

Oregon Department of Transportation

MOTORCYCLE LANE-SHARING

Literature Review

by

Myra Sperley
Amanda Joy Pietz

Oregon Department of Transportation
Research Section
200 Hawthorne Ave. SE, Suite B-240
Salem OR 97301-5192

for

Oregon Department of Transportation
Research Section
200 Hawthorne Ave. SE, Suite B-240
Salem OR 97301-5192

June 2010

Page 247 of 363 to/à Page 249 of 363

Withheld pursuant to/removed as

Copyright

Page 253 of 363 to/à Page 263 of 363

Withheld pursuant to/removed as

Copyright

Page 265 of 363 to/à Page 267 of 363

Withheld pursuant to/removed as

Copyright

Safety implications of lane-splitting among California motorcyclists involved in collisions

Report To

California Office of Traffic Safety

By

Thomas Rice
Lara Troszak

Safe Transportation Research & Education Center
University of California Berkeley

August 6, 2014

Page 271 of 363 to/à Page 278 of 363

Withheld pursuant to/removed as

Copyright

Ewald & Wasserman
RESEARCH CONSULTANTS, LLC

MOTORCYLE LANE-SHARE STUDY AMONG CALIFORNIA MOTORCYCLISTS AND DRIVERS 2014 AND COMPARISON TO 2012 AND 2013 DATA

METHODOLOGICAL AND ANALYSIS REPORT

Conducted on Behalf of:

The California Office of Traffic Safety

The Safe Transportation Research and Education Center - University of California, Berkeley

May 2014

27 MAIDEN LANE, SUITE 500
SAN FRANCISCO, CA 94108
PHONE 415.230.7740 FAX 415.230.7741

Page 280 of 363 to/à Page 329 of 363

Withheld pursuant to/removed as

Copyright

Motorcycle Lane-splitting and Safety in California

By

Thomas Rice, PhD
Lara Troszak, MA
Taryn Erhardt

Safe Transportation Research & Education Center
University of California Berkeley

May 29, 2015

Page 331 of 363 to/à Page 363 of 363

Withheld pursuant to/removed as

Copyright