

## PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

### ARTICLE DETAILS

<b>TITLE (PROVISIONAL)</b>	Injury from electric scooters in Copenhagen: a retrospective cohort study
<b>AUTHORS</b>	Blomberg, Stig Nikolaj Fasmer; Rosenkrantz, Oscar Carl; Lippert, Freddy; Collatz Christensen, Helle

### VERSION 1 – REVIEW

<b>REVIEWER</b>	Peng Chen University of South Florida, School of Public Affairs
<b>REVIEW RETURNED</b>	13-Sep-2019

<b>GENERAL COMMENTS</b>	<p>The manuscript is well organized with clear logic. The topic is emerging. Some related papers are recommended for references:</p> <p>Chen, Peng, and Qing Shen. "Built environment effects on cyclist injury severity in automobile-involved bicycle crashes." <i>Accident Analysis &amp; Prevention</i> 86 (2016): 239-246.</p> <p>Chen, Peng, and Jiangping Zhou. "Effects of the built environment on automobile-involved pedestrian crash frequency and risk." <i>Journal of Transport &amp; Health</i> 3, no. 4 (2016): 448-456.</p> <p>Chen, Peng, and Qing Shen. "Identifying high-risk built environments for severe bicycling injuries." <i>Journal of safety research</i> 68 (2019): 1-7.</p> <p>Chen, Peng. "Built environment factors in explaining the automobile-involved bicycle crash frequencies: A spatial statistic approach." <i>Safety science</i> 79 (2015): 336-343.</p> <p>Chen, Peng. "Built environment factors in explaining the automobile-involved bicycle crash frequencies: A spatial statistic approach." <i>Safety science</i> 79 (2015): 336-343.</p>
-------------------------	--

<b>REVIEWER</b>	Liraz Fridman Hospital for Sick Children, Toronto, Canada
<b>REVIEW RETURNED</b>	16-Sep-2019

<b>GENERAL COMMENTS</b>	<p>This paper describes injuries related to manual and electric scooter use in Denmark. In general, the methods need to be described in more detail, including the different exposures for each of the cohorts. The results section was not reflective of the study design and was incomplete. The authors performed significance testing and report p values in their tables but do not make comparisons throughout the results section. Additionally, the paper needs to be better edited re: language and grammar. Please check the tense throughout the paper – it is mixed, and I would stick with past tense. I would not recommend publication at this stage and think the manuscript needs to be significantly reconsidered.</p>
-------------------------	--

	<p><b>Abstract</b></p> <ul style="list-style-type: none"> <li>- Setting (line 13 – 14): tense should be past (i.e. “have” not “had”)</li> <li>- Setting (line 16 – 17): need to be more explicit about what is being introduced (e-scooters), sentence should be more specific to reflect this: “...before or after the introduction of e-scooters...)</li> <li>- Outcome measures (lines 31 – 34): no specific outcome measures are identified, what are the continuous and categorical variables that are being referred to here?</li> </ul> <p><b>Introduction</b></p> <ul style="list-style-type: none"> <li>- Page 4, Lines 32 – 33: abbreviations should be defined in full at first use (i.e. app should be application [app]), if only using once avoid abbreviation</li> <li>- Page 4, Lines 44 – 46: I am not clear about what the authors mean when they say a “moderate deposit”, are they referring to a monetary service, if so, how is the service free? Or do they put in payment for incidentals?</li> <li>- Page 5, line 9: I would remove the term “accident” and replace it with “collision”, the term accident makes it seem as if these events are not predictable and preventable which we know from the injury literature is not true</li> </ul> <p><b>Methods</b></p> <p>Generally, this section is incomplete. The authors do not explicitly describe different exposures in each cohort and what statistical comparisons will be made between groups. It is not clear whether both cohorts came from the same medical reports and what term for scooters were used to differentiate the two.</p> <ul style="list-style-type: none"> <li>- Page 6, lines (16 – 21): this section is unclear, what “contacts” are in each cohort, do the authors mean patients seen in the emergency department? Ultimately even if the authors are using secondary data and do not require consent since no identifying information is being reported these were still patients who sought treatment with a physician at a doctor’s office or hospital and this should be clearer in the methodology when describing participants</li> </ul> <p><b>Results</b></p> <p>Again this entire section is incomplete, the authors report p values in their tables but do not discuss significance or comparison between cohorts through the results section.</p> <ul style="list-style-type: none"> <li>- Page 7, lines (30 – 33): there were no headings for the figure therefore I am not sure what the authors are referring to in this section of the text</li> <li>- Page 8, table 1: header – omit the term “accident” and replace with collision. Typical table 1 statistics are purely description (i.e. N + frequency) there shouldn’t be significance testing reported before modelling is discussed</li> <li>- Page 10, (lines 23 – 25): I’m not sure I would say “many” occurred between 23:00 and 07:00 when you are describing less than 4% of your sample</li> <li>- Page 10, (lines 28 – 30): omit “were”</li> </ul> <p><b>Discussion</b></p>
--	--

	More explicit connections need to be made between the published literature and the findings in this study. For example, the authors reference helmet use being widely discussed (page 15, lines 18 – 21) and give specific examples from other study locations but don't relate these findings back to helmet use in Denmark.
--	---

<b>REVIEWER</b>	Narelle Haworth Centre for Accident Research and Road Safety-Queensland, Queensland University of Technology
<b>REVIEW RETURNED</b>	24-Sep-2019

<b>GENERAL COMMENTS</b>	<p>This manuscript is timely in seeking to provide further information on a rapidly emerging injury issue.</p> <p>Why "person-related" in the title? I think that these words can be omitted and it would still include non-riders.</p> <p>I am not sure of the logic of comparing electric and manual scooters. Other authors have not done this, so it would be good to see a justification. Are electric and manual scooters allowed to be used in the same locations?</p> <p>The meaning of acuity in the abstract is not clear and it remains unclear until Table 2.</p> <p>The type of treatment facility needs to be quite clear in the abstract in order for the reader to interpret the severity of outcome.</p> <p>Table 1 heading should be "scooters" not "electrical scooters". It is unclear in the text or the table what comparison the p values refer to. For riders, does "hit by vehicle or moving object" include hit by bike or scooter?</p> <p>The different time periods for the electric and manual scooter injuries make the patterns difficult to interpret because of seasonality - with time of day relationship with daylight/dark being very different in that part of the world. Would it be better to only present the manual scooter data for the same period as the electric scooters? This would also help by making it more likely that the electric scooters were shared, rather than private which is important for regulation etc.</p> <p>It is unclear to the reader who "non-riders" are. Are they all pedestrians, are some bicycle riders?</p>
-------------------------	---

<b>REVIEWER</b>	Ting Hway Wong Singapore General Hospital
<b>REVIEW RETURNED</b>	26-Sep-2019

<b>GENERAL COMMENTS</b>	<p>This is a well-conducted study in a health system with good capture of data. To my knowledge, this is the first, or perhaps one of the first, studies to include non-riders injured by personal mobility devices. Our recent paper using national trauma registry data from Singapore only reported rider data. Hence, I suggest this strength of the study is mentioned in the paper.</p> <p>Also, I do not think this counts as a limitation of the study: "Our study has several limitations. In the light of our findings, it is possible that the number of injuries has yet to peak." The authors have studied the phase of the use of scooters in their setting, and</p>
-------------------------	--

	it is prudent to predict that the number of injuries has yet to peak -- that is not a limitation of the study.
--	--

### VERSION 1 – AUTHOR RESPONSE

#### Reviewer 1

**Comment:** The manuscript is well organized with clear logic. The topic is emerging. Some related papers are recommended for references:

Chen, Peng, and Qing Shen. "Built environment effects on cyclist injury severity in automobile-involved bicycle crashes." *Accident Analysis & Prevention* 86 (2016): 239-246.

Chen, Peng, and Jiangping Zhou. "Effects of the built environment on automobile-involved pedestrian crash frequency and risk." *Journal of Transport & Health* 3, no. 4 (2016): 448-456.

Chen, Peng, and Qing Shen. "Identifying high-risk built environments for severe bicycling injuries." *Journal of safety research* 68 (2019): 1-7.

Chen, Peng. "Built environment factors in explaining the automobile-involved bicycle crash frequencies: A spatial statistic approach." *Safety science* 79 (2015): 336-343. report the PPV in the abstract too.

**Reply:** Thank you for the comments. We have added references in the discussion on using mathematical model in identifying high-risk areas.

#### Reviewer 2

**Comment** In general, the methods need to be described in more detail, including the different exposures for each of the cohorts.

**Reply:** Thank you for the comment – we have elaborated and clarified the method section. While exposure for both cohorts would be interesting, data on this is unfortunately not available to us, and we have not been able to find references to exposure in other works. Hence, we were not able to comment on exposure to scooters and electric scooters.

**Comment** The results section was not reflective of the study design and was incomplete. The authors performed significance testing and report p values in their tables but do not make comparisons throughout the results section.

**Reply:** Thank you for the comment. We acknowledge that the results section was not as accurate as intended and have altered the text above table 1.

Original text: 'The demographics and incident characteristics of these patients are shown in Table 1.'

Revised text: 'The demographics and incident characteristics **and comparison between** these patients are shown in Table 1.'

**Comment** Additionally, the paper needs to be better edited re: language and grammar. Please check the tense throughout the paper – it is mixed, and I would stick with past tense.

**Reply:** Thank you for the comment. We did use an English proof-reading service and should have paid more attention to tense. We have gone through the paper and revised to past tense.

**Comment** Setting (line 13 – 14): tense should be past (i.e. "have" not "had")

**Reply:** Thank you – this has been revised.

**Comment** Setting (line 16 – 17): need to be more explicit about what is being introduced (e-scooters), sentence should be more specific to reflect this: "...before or after the introduction of e-scooters...")

**Reply:** Thank you for the comment – we have revised as suggested.

**Comment** - Outcome measures (lines 31 – 34): no specific outcome measures are identified, what are the continuous and categorical variables that are being referred to here?

**Reply:** Thank you for the comment – Due to the word limitations of the abstract, it is not possible to be more specific in the abstract. However, we have elaborated on this in the methods section.

**Comment** - Page 4, Lines 32 – 33: abbreviations should be defined in full at first use (i.e. app should be application [app]), if only using once avoid abbreviation

**Reply:** Thank you for the comment – we have avoided the abbreviation in the revised text.

**Comment** - Page 4, Lines 44 – 46: I am not clear about what the authors mean when they say a “moderate deposit”, are they referring to a monetary service, if so, how is the service free? Or do they put in payment for incidentals?

**Reply:** Thank you for the comment. The system works very similar to that of shopping trolleys, where the customer pays a small deposit by inserting a coin, token or card, which is returned if and when the customer returns the cart to a designated cart parking point. We have clarified this in the text.

**Original text:** ‘a free-of-charge, publicly available bike to use upon a moderate deposit.’

**Revised text:** ‘a free-of-charge, publicly available bike to use upon a **minor deposit (20 Danish krone, appr. 2,5 euros) which were returned if and when the bike was returned to a designated parking point**’

**Comment** Page 5, line 9: I would remove the term “accident” and replace it with “collision”, the term accident makes it seem as if these events are not predictable and preventable which we know from the injury literature is not true

**Reply:** Thank you for the comment. This is true, and we have replaced the word ‘accident’ with ‘collision’.

**Comment** Methods. Generally, this section is incomplete.

**Reply:** Thank you for the comment. We have revised Methods. Please see comments to reviewer 1.

**Comment** The authors do not explicitly describe different exposures in each cohort and what statistical comparisons will be made between groups.

**Reply:** Thank you for the comment. Exposure to scooters, both electric and manual, would be extremely interesting. However, there are no statistics on scooter usage in Denmark, partly to the fact that electric scooters only very recently became legal. We have not been able to find any papers concerning exposure to scooters internationally.

**Comment** It is not clear whether both cohorts came from the same medical reports and what term for scooters were used to differentiate the two.

**Reply:** Thank you for the comment. We have clarified this.

**Original text:** 'Medical records referring to scooters were reviewed by one of the authors (OCMR) to verify eligibility and fill in a survey that systematically collected variables to be analysed (survey appendix 1). All records from the dispatch system were reviewed by the first author (SNB) applying the same survey.'

**Revised text:** 'Medical records referring to scooters were reviewed by one of the authors (OCMR) to verify eligibility and fill in a survey that systematically collected variables to be analysed, **including whether the record referred to an electric scooter or a manual scooter** (survey appendix 1). All records from the dispatch system were reviewed by the first author (SNB) applying the same survey.'

**Comment** - Page 6, lines (16 – 21): this section is unclear, what “contacts” are in each cohort, do the authors mean patients seen in the emergency department? Ultimately even if the authors are using secondary data and do not require consent since no identifying information is being reported these were still patients who sought treatment with a physician at a doctor’s office or hospital and this should be clearer in the methodology when describing participants.

**Reply:** Thank you for the comment. We are not using secondary data. We have used data and outcome, meaning treatment or referral data available at our Emergency Medical Services which includes referral of patients to emergency department, referral to General practitioner or dispatching an ambulance. This has been clarified in methods.

**Original text:** ‘The cohort contains contacts where the patient received medical advice, was referred to a General Practitioner the same or next day, was referred to an Emergency Department, or an ambulance was dispatched.’

**Revised text:** ‘The cohort contained contacts *recorded within Copenhagen Emergency Medical Services as an integrated point of contact for emergency patient care*, where the patient received medical advice, was referred to a General Practitioner the same or next day, was referred to an Emergency Department, or an ambulance was dispatched.’

**Comment** - Page 7, lines (30 – 33): there were no headings for the figure therefore I am not sure what the authors are referring to in this section of the text

**Reply:** Thank you for the comment. For reasons unknown to us, the figure titles and legends do not appear along with the figures but can be found on page 18 lines (26-36).

**Comment** - Page 8, table 1: header – omit the term “accident” and replace with collision. Typical table 1 statistics are purely description (i.e. N + frequency) there shouldn't be significance testing reported before modelling is discussed

**Reply:** Thank you for the very relevant comment. Accident is replaced by collision. We have chosen to show p-values in table 1 as there were differences between the two cohorts. We have revised the method section to reflect this.

**Comment** - Page 10, (lines 23 – 25): I'm not sure I would say “many” occurred between 23:00 and 07:00 when you are describing less than 4% of your sample

**Reply:** Thank you for this comment. By an unfortunate typing error, we wrote 3.9% occurred between 23:00 and 07:00. This should have been 33.9%. We apologise for this.

**Comment** - Page 10, (lines 28 – 30): omit “were”

**Reply:** Thanks. This had been corrected.

**Comment** Discussion. More explicit connections need to be made between the published literature and the findings in this study. For example, the authors reference helmet use being widely discussed (page 15, lines 18 – 21) and give specific examples from other study locations but don't relate these findings back to helmet use in Denmark.

**Reply:** Thank you for this comment. Academic papers on electric and manual scooters are limited. Regarding the helmet discussion, we have added a reference to a Danish study on the benefits of using a helmet. (Kaplan, Sigal, Konstantinos Vavatsoulas, and Carlo Giacomo Prato. "Aggravating and mitigating factors associated with cyclist injury severity in Denmark." *Journal of safety research* 50 (2014): 75-82.)

### **Reviewer 3**

**Comment** This manuscript is timely in seeking to provide further information on a rapidly emerging injury issue.

**Reply:** Thank you for the kind comment.

**Comment** Why "person-related" in the title? I think that these words can be omitted, and it would still include non-riders.

**Reply:** Thank you for the comment. We agree and has been omitted 'person-related' in the revised manuscript.

**Comment** I am not sure of the logic of comparing electric and manual scooters. Other authors have not done this, so it would be good to see a justification. Are electric and manual scooters allowed to be used in the same locations?

**Reply:** Thank you for the comment. We have revised the introduction to include a reflection upon this.

**Original text:** 'In this study, we report on scooter use over 42 months including the first 7 months of the electric scooter pilot scheme in Copenhagen taken from the records of the Copenhagen Emergency Medical Services (EMS).'

**Revised text:** 'In this study, we report on scooter use over 42 months including the first 7 months of the electric scooter pilot scheme in Copenhagen taken from the records of the Copenhagen Emergency Medical Services (EMS). *We compare electric scooters to manual scooters, as the electric scooter is the same device, but in an electric motor and thereby higher speed and force.*'

**Comment** The meaning of acuity in the abstract is not clear and it remains unclear until Table 2.

**Reply:** Thank you for the comment – we have revised Methods to include a list of collected data, including 'Acuity'. The following text is added to methods:

In appendix 1, the entire survey that was used to collect data from medical records are shown. We collected data on 'Type of scooter', 'patients', 'Mechanism of injury' (rider and non-riders), 'Helmet use', 'Intoxication', 'Acuity' (on a scale 1-5 with 1 being most concerning), 'Injury characteristics', 'Police involvement' and 'Referral'.

**Comment** The type of treatment facility needs to be quite clear in the abstract in order for the reader to interpret the severity of outcome.

**Reply:** Thank you for the comment – we added referral to a facility to the list of interventions in the manuscript.

**Original text:** 'Interventions: A pre-defined survey was completed in all cases where 'scooter' was present. This contained variables such as type of scooter, type of participant, mechanism of injury, acuity, intoxication etc'

**Revised text:** 'Interventions: A pre-defined survey was completed in all cases where 'scooter' was present. This contained variables such as type of scooter, type of participant, mechanism of injury, acuity, intoxication, **referral to treatment facility** etc'

**Comment:** Table 1 heading should be "scooters" not "electrical scooters".

**Reply:** Thank you, this is corrected in the revised manuscript using the term 'electric scooters'.

**Comment:** It is unclear in the text or the table what comparison the p values refer to

**Reply:** Thank you for the comment. We have clarified this in Results over table 1.

**Original text:** 'The demographics and incident characteristics of these patients are shown in Table 1.'

**Revised text:** 'The demographics and incident characteristics *and comparison between injuries from manual and electric scooter* are shown in Table 1. **We found significant differences in the two cohorts regarding age, gender, mechanism of injury for riders, ambulance use and referral to ED. Also, time of day was significantly different, where a large proportion of electric riders were injured during nights. Differences in helmet use and intoxication were also highly significant. See table 1 for details.'**

**Comment.** For riders, does "hit by vehicle or moving object" include hit by bike or scooter

**Reply:** Thank you for the comment. Moving objects would be any moving object where the rider not collides with any stationary object such as a wall or a parked car.

**Comment** The different time periods for the electric and manual scooter injuries make the patterns difficult to interpret because of seasonality - with time of day relationship with daylight/dark being very different in that part of the world. Would it be better to only present the manual scooter data for the same period as the electric scooters? This would also help by making it more likely that the electric scooters were shared, rather than private which is important for regulation etc.

**Reply:** Thank you for the comment. We did consider this while planning the study. However, the accumulated number of hours between sunrise and sunset is quite similar in the first two quarters of the year as the last two quarters of the year, and seasonal change was negligible.

**Comment.** It is unclear to the reader who "non-riders" are. Are they all pedestrians, are some bicycle riders?

**Reply:** Thank you for the comment. We have clarified this in Methods under data collection where we have added

'Persons controlling the scooter at the time of accident were defined as 'Riders', all other patients were defined as 'Non-riders', even patients who could be riding a bicycle for instance.'

#### **Reviewer 4**

**Comment** This is a well-conducted study in a health system with good capture of data. To my knowledge, this is the first, or perhaps one of the first, studies to include non-riders injured by personal mobility devices. Our recent paper using national trauma registry data from Singapore only reported rider data. Hence, I suggest this strength of the study is mentioned in the paper.

**Reply:** Thank you for the kind comment. The study from Singapore was not available at the time we performed our study. I find that some of the conclusions in our study echoes the findings in the Singapore study.

We will highlight that inclusion of non-rider of a strength of the paper. It is correct we are amongst the first to include these, although Trivedi (Trivedi, Tarak K., et al. "Injuries associated with standing electric scooter use." JAMA network open 2.1 (2019): e187381-e187381.) would probably be the first to include non-riders.

**Comment** Also, I do not think this counts as a limitation of the study: "Our study has several limitations. In the light of our findings, it is possible that the number of injuries has yet to peak." The authors have studied the phase of the use of scooters in their setting, and it is prudent to predict that the number of injuries has yet to peak -- that is not a limitation of the study.

**Reply:** Thank you for the comment. We agree on this and has removed this part of the limitations.

**VERSION 2 – REVIEW**

<b>REVIEWER</b>	Narelle Haworth Queensland University of Technology, Australia
<b>REVIEW RETURNED</b>	06-Nov-2019

<b>GENERAL COMMENTS</b>	<p>In my original comments, I had queried the logic of comparing manual and electric scooters. The authors have revised the text to note that "the electric scooter is the same device, but in (NOTE: replace "in" with "with") an electric motor and therefore higher speed and force". It should also be made clear at this point in the text that the shared scooters have a minimum age of 15 years, which in itself leads to differences between the injured scooter and electric scooter riders. Are the e-scooters only allowed to be used in bicycle lanes? Where can the manual scooters be used?</p> <p>The authors have responded to my query about acuity by defining the scale in terms of 1 being "the most concerning". I still find this somewhat unclear. I would presume that acuity relates to urgency of treatment. Would "1 requiring the most urgent treatment" be an appropriate expression?</p> <p>On Page 51 there is a discussion of mandating helmet use. It should be noted that mandation does not necessarily result in complete compliance, particularly for hired e-scooters. See recent publication doi: 10.5694/mja2.50275</p> <p>Below are some minor comments regarding English expression.          Abstract: Line 48 - surely not all of the non-riders were elderly pedestrians. Perhaps it would be better to say "typically elderly" or "mostly elderly"          Page 38 line 10 - should be "associated with", not "associated to", line 14 should be "collected", not "collects", line 39 remove "randomly" since this implies carelessness, line 51 - perhaps "was refunded" instead of "were returned"          Page 40 line 20 - should "bikes" be "scooters"?</p>
-------------------------	---

	<p>Page 42 line 7 - should be "is shown", line 16 - if there was more than one person on a scooter, was the non-controller counted as a rider or as a non-rider?</p> <p>Page 43, line 4 - should be "scooters", line 9 - "during nights" should be "during the night" or "at night", line 25 - should "accidents" be "collisions" here?</p> <p>Page 50, line 24 - what does "fall alone" mean? Does it mean fall without colliding with an object? This could be made clearer.</p> <p>Page 51, line 41 - the article referenced here is about psychiatry. Is this correct?</p> <p>Reference #8 - "once" is misspelt</p> <p>Reference #12 - "sweeper" is misspelt</p> <p>Refs #15 and 16 and #25 and #26- there seem to be extra letters at the end of the name of the final authors?</p>
--	--

<b>REVIEWER</b>	Ting Hway Wong Singapore General Hospital; Duke-NUS, Singapore
<b>REVIEW RETURNED</b>	20-Nov-2019

<b>GENERAL COMMENTS</b>	<p>This is a well-written paper on an important topic.</p> <p>One comment on the comparison between manual and electric scooter categories that I apologize I did not notice initially: manual vs electric, does the p-value represent a 4-way comparison in tables 1 and 2 (rider manual, rider electric, pedestrian manual, pedestrian electric)?</p> <p>I feel riders and pedestrians should be analyzed separately, from a behavioural and epidemiological viewpoint (i.e. there are two questions: 1. what is the profile of riders who choose manual vs electric scooters? 2. what is the profile of pedestrians injured by manual vs electric scooters?).</p> <p>I understand the numbers of pedestrians are low when broken down, and authors may choose to merge some of the groups instead (e.g. compare age of all pedestrians injured by manual vs electric scooter), and present pedestrian characteristics in separate rows / separate tables.</p> <p>There is a minor typo in line 41: "fall alone—involving no other party" (the second -- in the abstract was not deleted).</p>
-------------------------	--

### VERSION 2 – AUTHOR RESPONSE

**Reviewer 3**

**Comment:** In my original comments, I had queried the logic of comparing manual and electric scooters. The authors have revised the text to note that "the electric scooter is the same device, but in (NOTE: replace "in" with "with") an electric motor and therefore higher speed and force".

**Reply:** Thank you for the comment. We have corrected the language, and apologize for the previous misleading choice of words

**Comment:** It should also be made clear at this point in the text that the shared scooters have a minimum age of 15 years, which in itself leads to differences between the injured scooter and electric scooter riders. Are the e-scooters only allowed to be used in bicycle lanes? Where can the manual scooters be used?

**Reply:** Thank you for the comment. We have revised the manuscript describing rules of usage, to clarify rules regarding age restrictions. Riders of electric scooters must be supervised by an adult, unless they are 15 years or older. Thus, we cannot per se exclude children riding electric scooters, or state the populations are different in this respect.

Electric scooters are under the same legislation as bicycles and must ride in bicycle lanes. However, there are exceptions as for instance recreational areas or playgrounds. Similarly, regarding manual scooters, there are exceptions to the rules, where manual scooters can be permitted in bicycle lanes, though only in absence of pavements etc. We find, that even though these distinctions are relevant, describing the rules in detail would not benefit the manuscript as a whole.

**Comment:** The authors have responded to my query about acuity by defining the scale in terms of 1 being "the most concerning". I still find this somewhat unclear. I would presume that acuity relates to urgency of treatment. Would "1 requiring the most urgent treatment" be an appropriate expression?

**Reply:** Thank you for the comment. We agree that the expression 'concerning' appears somewhat unclear and have thankfully revised the manuscript as suggested. In table 2, acuity has consequently been revised to 'most urgent' and 'least urgent'.

**Comment:** On Page 51 there is a discussion of mandating helmet use. It should be noted that mandation does not necessarily result in complete compliance, particularly for hired e-scooters. See recent publication doi: 10.5694/mja2.50275

**Reply:** Thank you for bringing this recent paper to our attention. It is a very interesting paper, and we have added following sentence to the revised manuscript citing the aforementioned paper: 'although mandation does not necessarily result in complete compliance, particularly for hired e-scooters.'

Additionally, reviewer 3 lists some minor corrections regarding English expressions. We appreciate the help and has revised all points accordingly.

Four of the references had problems with the format. This was due to a hiccup in endnote, and all references are now correctly formatted. Thank you for pointing this out.

#### **Reviewer 4**

**Comment:** One comment on the comparison between manual and electric scooter categories that I apologize I did not notice initially: manual vs electric, does the p-value represent a 4-way comparison in tables 1 and 2 (rider manual, rider electric, pedestrian manual, pedestrian electric)?

I feel riders and pedestrians should be analyzed separately, from a behavioural and epidemiological viewpoint (i.e. there are two questions: 1. what is the profile of riders who choose manual vs electric scooters? 2. what is the profile of pedestrians injured by manual vs electric scooters?).

I understand the numbers of pedestrians are low when broken down, and authors may choose to merge some of the groups instead (e.g. compare age of all pedestrians injured by manual vs electric scooter), and present pedestrian characteristics in separate rows / separate tables.

**Reply:** Thank you for the kind comment. We have discussed the epidemiologic question raised here, and agree with the reviewer, that riders and pedestrians should be analysed separately. We have performed new analysis of the two groups, though only reported P-Values for electric riders VS manual riders, as the number of pedestrians injured by electric or manual scooters were too low to obtain any significant results.

**Comment** There is a minor typo in line 41: "fall alone—involving no other party" (the second -- in the abstract was not deleted).

**Reply:** Thank you for the comment. We apologize for this typo and have revised the manuscript

**VERSION 3 – REVIEW**

<b>REVIEWER</b>	Narelle Haworth Queensland University of Technology, Australia
<b>REVIEW RETURNED</b>	01-Dec-2019
<b>GENERAL COMMENTS</b>	The authors have addressed my comments satisfactorily.