Author’s response to reviews

Title: Bicycle crashes and sickness absence - A population-based Swedish register study of all individuals of working ages

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Author’s response to reviews:

Regarding manuscript PUBH-D-18-03929

Dear Editor,

Thank you for the opportunity to submit a revised version of our manuscript titled: “Bicycle crashes and sickness absence - A population-based Swedish register study of all individuals of working ages”!

We thank the reviewers for the helpful comments and have revised the manuscript according to them. Please find below our detailed responses to the comments from the reviewers. The changes that are made in the manuscript in regards to the comments (and a few other changes e.g., one sentence about sex stratification in the method, and small changes in the references) have been marked with track changes in the manuscript. If there are any further points of concern, we welcome the opportunity to clarify those as well.

This revised manuscript has been read and approved by all the authors.

On the behalf of all authors,

Yours sincerely,
Reviewer reports:

Jake Olivier (Reviewer 1): This was an interesting paper on factors associated with sickness absence or disability pension and bicycle injuries in Sweden. I particularly thought it interesting that the vast majority of injuries were due to single-bicycle crashes and that TBI/non-concussion had much higher odds of having a new SA compared to concussions. There seems to be a lack of understanding in the literature that most injurious bicycle crashes do not involve another vehicle and that TBI is perhaps a more important concern than concussion (at least the less serious forms of concussion).

Authors response: Thank you for these comments! We have now included this in the conclusion (Page 16, Line 417). We fully agree that it is important to highlight that single-bicycle crashes stands for most of the crashes. It is quite natural that TBI other than concussion has higher odds since these injuries are more severe.

Specific comments:

Line 64: Should it be "colleagues"?
Authors response: Yes, thanks for noticing this. It is now changed. (Page 3, Line 80).

Line 74: "where" instead of were?
Authors response: Thanks, now changed. (Page 3, Line 90).

Lines 122,124: Should these be of the form V19.3?
Authors response: Thanks for noticing this, now the form of the diagnoses codes is changed. (Page 5, Line 138, 147, 149).

Line 131: Could some discussion be given for how the main injury diagnosis was determined? Not all databases have a main or primary diagnosis field.
Authors response: The register used here, that is the Swedish nationwide patient register, fortunately has a ‘main diagnoses field’. (as opposed to other registers, as you mention). In another field all, if any, secondary diagnoses are registered. The main diagnosis is determined by the treating physician. This is now stated in the revised manuscript. (Page 5, Line 154).

Line 150: Not sure what "with larger groups alternatively groups expected" means.

Authors response: Thanks for pointing out that this wasn’t clear enough, we now revised this text. We aimed for stable reference groups in the analyses, therefore, large groups were chosen as reference groups, as well as those for which we expect low ORs of SA. (Page 6, Line 176).

Does "spell" refer to a pre-existing condition or event? I found the use of this word confusing. Please replace.

Authors response: The concepts used within the insurance medicine literature can of course be – and are - discussed. Here we have chosen to call the time from the start to the end of a continuous period of sickness absence (SA) a SA spell. Another concept used is SA periods. Generally, we and other researchers within the area differ between the concept of SA spells and SA periods in the following way: a SA spell can include one or several SA periods; that is, with a SA period we mean the period covered with a sickness certificate – if the SA spell is prolonged with one or more SA periods by a physician, they are all within the same SA spell. Some also use the term SA case or SA episode, however, this is less common now. As a leading group within the area of insurance medicine we try to be consistent with how we use the concepts/terms, not to introduce extra confusion; using the two terms of SA spell and SA periods as described above. We guess that your confusion is that we there, in the text, had not been clear about that it was a SA spell we meant. We had missed to include the abbreviation SA before ‘spell’. This is now changed in the revised manuscript. (Page 7, Line 198).

Line 180: Should it be "first days" after injury?

Authors response: Thanks, added “after the actual crash date” to make it more clear. (Page 7, Line 204)

Line 196: If listing models by number, perhaps they should be for models 1-3 as well?

Authors response: Thank you for noticing this, it is now added to the text. (Page 8, Line 230-234)
Line 197-198: Is this a sensitivity analysis? It would be good to identify it, if so.

Authors response: You are right, this is now specified. (Page 8, Line 235)

Results on page 11: What does "OR..." RESPECTIVE "OR..." mean? Is it meant to be "compared to"?

Authors response: Thanks for mentioning this uncleanness, now this has been clarified. (Page 11, Line 296-299).

Reviewer 2 (Reviewer 2): PEER REVIEWER ASSESSMENTS:

OBJECTIVE - Full research articles: is there a clear objective that addresses a testable research question(s) (brief or other article types: is there a clear objective)?

Yes - there is a clear objective

DESIGN - Is the current approach (including controls and analysis protocols) appropriate for the objective?

Yes - the approach is appropriate

EXECUTION - Are the experiments and analyses performed with technical rigor to allow confidence in the results?

No - there are minor issues

STATISTICS - Is the use of statistics in the manuscript appropriate?

Yes - appropriate statistical analyses have been used in the study
INTERPRETATION - Is the current interpretation/discussion of the results reasonable and not overstated?

No - there are minor issues

OVERALL MANUSCRIPT POTENTIAL - Is the current version of this work technically sound? If not, can revisions be made to make the work technically sound?

Yes - current version is technically sound

PEER REVIEWER COMMENTS:

GENERAL COMMENTS: This is an important study for the reasons given in the Strengths paragraph of the Discussion section of the paper. It provides comprehensive analyses of significant bicycle injuries in a very large population with complete data ascertainment.

The methods are clearly described. Details that are given about the Swedish social security system are appropriate to assist in understanding how SA or DP are treated in the paper.

The general associations with increased SA in women, older adults, and people with less education are in the expected directions.

REQUESTED REVISIONS:

See list of revisions suggested in subsequent section

ADDITIONAL REQUESTS/SUGGESTIONS:

There are a relatively small number of significant issues that require clarification. These are discussed below.

The sampling frame for the study needs to be clarified. It is stated to be people who "received inpatient or specialized out-patient healthcare due to an injury from a new bicycle crash". Some
explanation of what this means in an international context should be provided. The reviewer presumes that presentations to primary medical care are excluded (meaning presentations to a health clinic or general medical practice). It is not clear whether presentation to a hospital emergency department is included or excluded.

Authors response: Thank you for alerting us on this lack of information in the paper. We do not have information on injuries that only have been handled in primary healthcare; that is, by a general practitioner (GP) or a nurse there – nor on injuries not having led to any need of healthcare. In Sweden, primary healthcare accounts for about 18% of the health and medical care resources, which is a small proportion in an international comparison. Injuries that led to healthcare at emergency units were included. A referral from a GP is not needed to seek healthcare at specialist or emergency units. This is now clarified in the revised method section (Page 4, Line 102).

In the Discussion section it appears that additional results are added, for example the likelihood of SA with particular injuries. These data are interesting but could be transferred to the Results section.

Authors response: We agree; new results are not to be added in the discussion section. The results you refer to are all presented in Table 4. We have now made that clear in the discussion section (Page 15, Line 389).

There are a number of minor issues, mainly about improving readability:

Abstract - methods - "number of people receiving SA or DP, ongoing SA or full-time DP already at the time of the crash, and new SA >14 days were analysed". Suggest adding underlined words.

Authors response: We agree that readability could be improved and have now revised the abstract (Page 1, Line 32).

Abstract - results - "single-bicycle crashes". This would be clearer if stated as "single vehicle bicycle crashes".

Authors response: No other vehicle was involved in the crash, just one bicycle (i.e. a fall or obstacle collision), further, the term single-bicycle crash is widely used, and thus we have not changed this term.
Abstract - results - "external injuries". This would be clear if stated as "open wounds, contusions and superficial injuries" as stated in the body of the paper.

Authors response: We have chosen to use the definition “external” which is often used in the field of traffic safety research. According to the Injury Severity Score (ISS) all soft tissue injuries are coded as external including open wounds, contusions and superficial injuries. As you state, more details on that category are found in the manuscript.

Page 6 - line 154 "having a disease or injury leads leading to reduced work capacity [23].

Authors response: Thanks, now changed (Page 6, Line 180).

Page 8 lines 205 and 206 "… men (57%) in the study population, while there were similar proportions of individuals by gender in each age group"

Authors response: Thanks for pointing to the need of being clearer regarding this. This have now been clarified in the paper (Page 9, Line 252).

Page 10 lines 226 and 227 "… healthcare (14%). External injuries and fractures were the most common injury types, accounting for 39% and 37% of all injuries, respectively.

Authors response: Thanks, now changed (Page 10, Line 279).

Page 13 line 277 and 278 "Moreover, women, older individuals, individuals with high school educational level …

Authors response: Thanks for noticing this, now changed (Page 13, Line 334).

Page 13, line 278 Don't agree that "married individuals had higher odds for such new SA" as this was only in the unadjusted model.

Authors response: Agree, thanks for noticing this, now changed in the manuscript. (Page 13, Line 335)
Page 13, line 284, reword to "Despite efforts to reduce the number of road users who are killed or injured …".

Authors response: Changed (Page 13, Line 341).