Reviewer’s report

Title: Road Traffic Noise and Registry Based Use of Sleep Medication

Version: 0 Date: 22 May 2017

Reviewer: Mette Sørensen

Reviewer's report:

This is a well-written paper addressing an important topic. The methods, analyses and interpretation are generally appropriate. I do however have some major comments regarding the outcome definition and inclusion of self-reported sleep disturbances information (see below).

Page 5: Outcome definition (sleep medication use). One prescription of sleep medication is not much - please add also a more strict outcome of "two or more prescriptions"! Also, the authors should consider excluding persons who had two or more prescriptions of sleep medication in 2008, but no prescriptions in 2009, at least as a sensitivity analysis!

Page 6 line 147-149. It is unclear how this (END mapping) relates to what was described above (line 132-146)? Did the authors use the END mapping data or did they estimate noise themselves?

DAG (additional figure): I miss a direct arrow between SES and sleep medication use, as low SES has been associated with higher rates of sleep complaints (not necessarily going through lifestyle)!

I recommend deleting people with night-shift work from the analyses - sleep patterns in this group is very different compared to the other participants!

Page 9, effect modifications. The authors include a number of relevant effect modification analyses. I strongly recommend also adding an analysis stratified on noise annoyance.

Please add information in the result section on the distribution of your outcome - how many filled in 1, 2, 3, 4 etc. prescriptions.

The minimum noise level estimated is 7.6 dB. This is far below the background level of noise (a very silent bedroom is around 20 dB) and therefore unrealistic (especially considering that this is outdoor levels!!). This potential misclassification may be important for the linear analysis. A standard approach used in most paper on noise is to use a "lowest detectable level of noise". I recommend 35 dB for night-time noise. The author should apply this in all analyses!

Page 13. Please add the estimates for the stratified analyses on sex (instead of just writing the interaction p-value).
The authors have information on self-reported sleep (both medication and disturbance) for this cohort: https://www.ncbi.nlm.nih.gov/pubmed/28364487 - in this paper the authors find that traffic noise was associated with difficulties falling asleep and waking up too early. It would be highly relevant for the present publication to know the degree of association between the prescription data used and information on self-reported sleep? Also, this should be addressed in the discussion (which at present only discusses previous studies on sleep medication) - I find it highly important that the different estimates of sleep are compared and discussed (in these few unique cohorts that has information on both self-reported sleep and sleeping medication prescriptions)!

Minor

Typo at page 7 line 156 - were should be corrected to where.

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