Reviewer's report

Title: Associations between residence at birth and mental health disorders: A spatial analysis of retrospective cohort data

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Reviewer: Eyal Oren

Reviewer's report:

This is an interesting article that examines whether risk of mental health disorders varies by birth location. The article examines spatial associations between residence at birth and odds of depression, bipolar disorder and post-traumatic stress disorder.

Major compulsory revisions

While I don't have that many comments overall, and think this is a well-written article, there are a few major points which require clarification:

--Why did you not stratify (or potentially adjust for) the number of years of residence at the birth location? Was this data not available to you?

--On a related note, since you had information on residential history, it would seem that if someone lived at their birth location for a very brief time, then still moved within the study area to a new location for a more prolonged period, the second location might be the relevant one, at least if you wanted to investigate exposures immediately after birth

--Consider examples where future residential locations are not on the causal pathway between birth location and mental illness (but which have correlated exposures for example). While they cannot affect your location of birth and occur temporally later, and are not confounders per se, they may modify the risk of a particular outcome and the exposure windows in subsequent time periods probably do matter, and should be discussed accordingly. Your overall conclusions should be greatly tempered to reflect the fact that you are missing exposure data beyond birth.

--While you acknowledge the limitations of using "place of birth" as your exposure, it is not clear why you don't use a more discrete case example for the potential spatial variation in outcomes. Since place represents a surrogate for the underlying exposures, using an actual exposure would help to validate your proposed spatial associations.

--Please note other possible sources of residual confounding

Minor Essential Revisions

--Please specify your method of imputation (methods)

--Please add a citation in your second to last sentence of the manuscript (end of
discussion)
--Please comment on possible edge effects on your map surface
--Please clarify graphs--legend should be labeled clearly and different shading used IF manuscript will not be printed in color.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests