

## Peer Review Report

# Review Report on The Berlin–Brandenburg Air Study –a Methodological Study Paper of a Natural Experiment Investigating Health Effects Related to Changes in Airport–Related Exposures

Original Article, Int J Public Health

Reviewer: Apolline Saucy

Submitted on: 17 May 2023

Article DOI: 10.3389/ijph.2023.1606096

### EVALUATION

#### **Q 1** Please summarize the main findings of the study.

This article presents the overall designed and planned analyses of the BEAR study. The BEAR study is a natural experiment study involving schoolchildren living near the new Berlin–Brandenburg airport and control children living further away from the airport, and includes school-based examination of various outcomes before and after traffic relocation. The authors plan to use this context to analyse both short- and long-term impacts of ultra-fine particles on children's respiratory, cardiovascular, and neurocognitive outcomes.

#### **Q 2** Please highlight the limitations and strengths.

##### Strengths

This study presents many strengths, due to its prospective longitudinal design and the presence of a natural experiment, which offers the possibility to investigate the health impacts of UFP with minimal bias. This type of design is particularly needed in environmental health research. Further, the exposure assessment approach is strong and the authors plan to adjust the analyses for other air pollutants and noise.

##### Limitations

The authors present different statistical analyses to evaluate short-, mid-, and long-term outcomes. As a reviewer, I find it difficult to evaluate which study population(s) and years of measurements will be included in the different analyses. It is also slightly unclear how the control group (children further from the airport) will be used in the analyses and how

#### **Q 3** Please provide your detailed review report to the authors. The editors prefer to receive your review structured in major and minor comments. Please consider in your review the methods (statistical methods valid and correctly applied (e.g. sample size, choice of test), is the study replicable based on the method description?), results, data interpretation and references. If there are any objective errors, or if the conclusions are not supported, you should detail your concerns.

This manuscript is well-written and presents a very interesting and meaningful study of the field. My main and only concern regards the clarity of the description of the planned analyses, including the following points:

1. Since this paper presents a prospective study with several exposure and outcome time points, as well as several statistical analyses, a graphical overview of the study design would improve the general understanding of the analyses.

2. Please, describe more precisely the different statistical analyses (which timepoints and study populations (children near the airport VS control children will be used in the different analyses).

##### Short-term analyses:

3. It is not clear to me if the short-term analyses actually take advantage of the natural experiment design, or if they will be focused on children living near the airport.

4. Please specify if/how the controls will be used

##### Long-term analyses:

4. Please specify which is the exposure of interest. Is it UPF or the binary location (near the airport VS control)?

Concluding remark:

5. The study design is very interesting and unique. However, it needs to be described more clearly how it will be taken into account in the analyses. Also, given that there are measures before and after the "intervention" (i.e. air traffic relocation), did you consider analyses focusing on changes within-individuals (children living near the airport only) or difference-in-differences (including children living near the airport VS controls)?

**PLEASE COMMENT**

**Q 4** Is the title appropriate, concise, attractive?

The title should clearly state that this paper presents the study design and planned analyses, not the actual results. For example, it could be rephrased as "Description of the Berlin-Brandenburg Air Study - a Natural Experiment to Investigate Health Effects Related to Changes in Airport Related Exposures". It is very good practice to publish the study protocol/planned analyses but it should appear in the title and abstract.

**Q 5** Are the keywords appropriate?

Yes

**Q 6** Is the English language of sufficient quality?

Yes

**Q 7** Is the quality of the figures and tables satisfactory?

Not Applicable.

**Q 8** Does the reference list cover the relevant literature adequately and in an unbiased manner?)

Yes

**QUALITY ASSESSMENT**

**Q 9** Originality



**Q 10** Rigor



**Q 11** Significance to the field



**Q 12** Interest to a general audience



**Q 13** Quality of the writing



**Q 14** Overall scientific quality of the study



**REVISION LEVEL**

**Q 15** Please make a recommendation based on your comments:

Minor revisions.