This manuscript addresses an important question: what happens to perinatal mortality rates among immigrants from developing countries where the perinatal mortality rate (PMR) is high, when they give birth in receiving countries where the PMR is much lower? It does so by comparing PMR among specific immigrant groups giving birth in Norway with the PMR in their countries of origin. PMR comparisons are also made with native-born Norwegians. As the authors note, this is the first study to present country of origin PMR comparisons for immigrant groups – and it is worthwhile to do so.

The paper is generally well written and the analyses are carried out with reliable Norwegian population-based data for the period 1984-2006, applying the same definitions as used by WHO for their PMR reporting. What the paper shows is that the selected immigrant groups all have significantly lower PMR than in their countries of origin, using WHO data/estimates for the comparisons. The authors rightly acknowledge the limitations of the WHO data for some countries where inadequacies in data collection mean that rates are likely to be under-estimates of actual PMR. What the paper also shows is that despite improvements over rates in their home countries, most groups still had significantly worse outcomes than the Norwegian-born, with the exception of women from Viet Nam, Iraq and Thailand. While the reasons for these differences are not the stated focus of this paper – and the authors do note the limitations of their not having access to data on social factors – they offer some possibilities in the Discussion, highlighting the need for much greater effort in future both to explain, and to act on reducing identified disparities.

I do have some questions, and also some suggestions for strengthening the paper.

Major essential revisions/queries:

1. It would be of interest to know something more about the excess mortality that is occurring for those immigrant groups with higher PMR compared with the Norwegian-born. Is it possible to separate stillbirths from early neonatal deaths in the analyses, in addition to giving the total PMR? Other data would suggest that the excess deaths among immigrants may mostly be in stillbirths. Separating deaths in this way may give clues to explanations about some of the disparities with Norwegian-born women.
2. Preterm birth is commonly a major contributor to perinatal mortality. Does preterm birth differ between the groups of interest in this study? Are the authors able to adjust for gestation, along with age, parity, plurality and year of birth? Further, is it possible that the excess deaths in some immigrant groups are in fact more likely to be at or near term, compared with the Norwegian-born? I ask because we have some suggestions of this in (unpublished) data in Australia, and if that is the case, then it may highlight a need for greater vigilance and support for immigrant women regarding the signs of compromise in fetal wellbeing close to term, and/or better processes to enhance communication between women and their caregivers at this time, especially for women who are not fluent in the host country language.

If some light could be shed on these questions, it would strengthen the paper’s contributions to this important – and to date insufficiently investigated – area of research.

Minor essential revisions/queries:

1. Page 3, third paragraph: ‘million’ not ‘millions’; and ‘women of childbearing age’, not women in a childbearing age

2. Page 5: 5364 births were excluded because of missing information on perinatal vital status. Would the authors comment on whether such missing data was more or less likely among immigrant versus Norwegian-born women.

3. Page 5: Definitions of the groups of interest are according to maternal country of birth, except that a woman was defined as Norwegian ‘if both her parents were born in Norway’. Does this mean that a woman born in Norway is not included, if one or both of her parents were born outside Norway? Why has this definition been used, rather than the simpler one of mother’s own country of birth for all groups? Immigrant women may well have one or both parents born outside their country of origin, but this does not seem to have excluded them from their country of origin grouping. Also, the tables currently actually imply a common definition for all groups, ie maternal country of birth, even for the Norwegian group. Please provide some clarification.

4. Page 6, second paragraph: presumably the age category which is described as #20, is actually <20, given the next category is 20-24?

5. Page 7, third paragraph: ‘The perinatal mortality declined...’ should be ‘Perinatal mortality declined..’; and ‘less multiple births’ should be ‘fewer multiple births’

6. Page 10, second paragraph: delete ‘an’ before advantageous


8. Table 3 describing maternal characteristics by country of birth would be better placed as Table 2 prior to the adjusted analyses in the current Table 2; and
preferably also include gestation (or proportion preterm <37 weeks?)

9. Figure 1 could usefully show PMR for each of the years available from WHO in countries of origin, rather than just 2004, especially as the whole period for 1988-2005 is shown for Norway. Or alternatively, it could be deleted altogether, as it actually simply repeats information provided in the current Table 1.

10. Table 1: PMRs should probably be restricted to one decimal place; the WHO figures have been rounded to whole numbers. I think a consistent approach should be adopted.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.