**AUTHOR RESPONSE**

Referee: 1  
  
COMMENTS TO THE AUTHOR(S)  
The authors have addressed all my comments and incorporated discussions on the uncertainty and limitations of the presented results.

We’re glad our revisions have adequately addressed your comments.  
  
Referee: 2  
  
COMMENTS TO THE AUTHOR(S)  
Thank you for revising the manuscript and responding to the comments. While I can understand the author's claim, the claim appears to overreach the supporting evidence. I still do not think that the responses and the revisions justify attributing the mortality to temporal changes in NDVI and applying a single risk function across the world. A lack of appropriate evidence does not warrant the use of evidence that is not fit for the intended purpose. It should be demonstrated that the result of the meta-analysis captures the effect of temporal changes in NDVI. Applying a single risk function might be justified if the causal relationship and underlying physiological or pathological mechanisms are clear and expected to be common in humans, but this is not the case.

Thank you for your comments. We’ve added to the discussion section the limitation of the spatial nature of the meta-analysis being applied to temporal differences in NDVI.

*“Moreover, the studies included in the meta-analysis compare NDVI across locations. Our study assumes that the mortality relationships found when comparing spatial differences in NDVI can be applied to temporal differences.” Study to refer to that looks at temporal differences?*

*“A few studies have tested the causal pathways linking urban greenspace to reduced mortality and found evidence that greenspace is associated with health through better air quality, increased physical activity, and reduced stress (Zhang et al., 2021). City walkability (safety, pedestrian infrastructure, traffic, etc.), time spent near home where we have measured their exposure (employment type, leisure time, etc.), and baseline environmental hazards (heat, air pollution, noise, etc) may impact the strength of the greenspace-health relationship across different cities in addition to individual factors like age, socioeconomic status, and gender.”*

It is necessary to limit the claim to reflect the existing evidence to assure the credibility of the study. For example, limiting the regional scope of the study to the developed countries in the temperate climate zone and estimating the mortality difference between factual and counterfactual scenarios (not temporal changes) would be an alternative option.

Thank you for your comments. We have added text to be clear about what regions and climate zones were included in the meta-analysis from which we draw our exposure-response function and to state that our results are less certain for cities outside these regions and climate zones. Most of the cities included in the meta-analysis fall in either temperate or continental climate zones, however there are some arid cities in China included from the Ji et al., 2019 paper and some tropical cities in Florida, USA included from the James et al., 2016 paper.

*“We use one exposure-response function globally that is based primarily on European and North American studies in temperate and continental climate zones, where greenspace is relatively high. Thus, fewer data points contribute to the exposure-response curve at very high or low NDVI levels. The relationship between NDVI and all-cause mortality may be related to current NDVI levels and other factors that vary by region and climate. To address this, we chose a large-scale meta-analysis that includes populations from the Northern America, Eastern Asia, Southern and Western Europe, and Australia and New Zealand regions, with significant representation of temperate and continental climates and limited inclusion of select arid and tropical cities, to be as generalizable as possible. The uncertainty of our estimates is larger for cities in regions and climate zones not well-represented by the meta-analysis.”*

Referee: 3  
  
COMMENTS TO THE AUTHOR(S)  
I thank the authors for addressing the comments.  
  
Re the uncertainty:  
- There is no mention of how uncertainty is assessed in the revised manuscript.  
- I understand the issues about computational burden, but from a probability standpoint, simply using the bounds of HR and y\_0 to derive the confidence intervals is wrong. Two random variables are at play here.

Thank you for your comments. We have run a Monte Carlo simulation of 10,000 draws from a normal distribution of both the hazard ratio and mortality rates to more accurately capture the known uncertainty. We have updated all references to 95% confidence intervals throughout the paper to reflect these simulations, using the 2.5th and 97.5th percentile of the simulated means as our uncertainty interval. Figure S7 (formerly S6) and Table S2 and S3 have also been updated.

We have updated the methods section to describe this change:

*“Quantifying uncertainty*

We ran 10,000 Monte Carlo simulations of Equation 3 for each city to estimate uncertainty intervals of our mortality estimates from changes in NDVI. We used estimates of error provided in the meta-analysis and by the GBD study to draw from normal distributions of the hazard ratio and baseline mortality estimates. For each simulation, the same draw of the hazard ratio was used for all cities.”, lines 182-187.

We have further included more text in the discussion section to describe unmeasured sources of uncertainty and how we might expect these sources to impact our results:

Referee: 4  
  
COMMENTS TO THE AUTHOR(S)  
The authors have addressed all the questions that I proposed.

We’re glad our revisions have adequately addressed your comments.  
  
Referee: 5  
  
COMMENTS TO THE AUTHOR(S)

EDITORIAL BOARD MEMBER'S REPORT:  
The manuscript was improved and clarified in response to the comments from 4 reviewers, and most review comments were properly responded. However, some minor issues remain.

1) The main conclusions of this meta analysis is based a simple statistical approach with 2014-2023 NDVI time series, and there is a major uncertainty and limitation. Suggest to further extend discussion to highlight the limitation and uncertainty, and explain the key mechanisms behind NDVI driven morality across different climate zones.

2) Figure 1 doesn't present clear trends or temporal/spatial contrasts among regions, and the crowded curves in figures are quite confusing. suggest to further define the figure by using highly summarized data instead to better reflect key patterns.