

Quantifying parks as preventive health assets using population-scale mobility data

Corresponding Author: Professor 浩然 张

This manuscript has been previously reviewed at another journal. This document only contains information relating to versions considered at Nature Communications.

This file contains all reviewer reports in order by version, followed by all author rebuttals in order by version.

Version 0:

Reviewer comments:

Reviewer #1

(Remarks to the Author)

I believe that this paper makes an interesting contribution to the public health benefits of green spaces. The only suggestion I would make is to cite a paper by Longo et al (2015) in Social Science and Medicine when the authors discuss the Travel Cost Model. Longo et al's paper is innovative as it is the first paper that adapts the Travel Cost Model for valuing in monetary terms the health benefits of walking. This is particularly relevant for your article, and the authors can expand on how their methodology advances the literature in this field.

Longo, A., Hutchinson, W.G., Hunter, R.F., Tully, M.A. and Kee, F., 2015. Demand response to improved walking infrastructure: A study into the economics of walking and health behaviour change. Social science & medicine, 143, pp.107-116.

Reviewer #2

(Remarks to the Author)

The authors have adequately addressed my concerns about this paper.

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Response to Reviewers

We sincerely thank the reviewers for their careful evaluation of our manuscript and for their constructive comments. We have revised the manuscript accordingly. Our point-by-point responses are provided below.

Reviewer #1

Comment:

I believe that this paper makes an interesting contribution to the public health benefits of green spaces. The only suggestion I would make is to cite a paper by Longo et al. (2015) in *Social Science & Medicine* when the authors discuss the Travel Cost Model. Longo et al.'s paper is innovative as it is the first paper that adapts the Travel Cost Model for valuing in monetary terms the health benefits of walking. This is particularly relevant for your article, and the authors can expand on how their methodology advances the literature in this field.

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Response:

Thank you for this helpful suggestion. We agree that the study by Longo et al. (2015) provides an important connection between economic valuation, walking behaviour and health benefits. We have therefore added this paper to the manuscript and expanded the discussion of the relevant valuation literature.

Specifically, in the Introduction we now acknowledge that previous economic work has valued behavioural responses to improvements in walking infrastructure and has demonstrated how changes in walkability can be translated into measurable welfare gains. We further clarify how our approach builds on and complements this literature. Rather than valuing access to recreational sites or willingness to pay for improvements in walking infrastructure, our framework uses observed park visitation and inferred in-park walking activity to estimate park-specific preventive-health benefits and compares these benefits directly with land, construction and operating costs. We have also clarified this distinction in the Discussion.

The Longo et al. (2015) paper has been added to the reference list as Reference 24.

Reviewer #2

Comment:

The authors have adequately addressed my concerns about this paper.

Response:

We thank the reviewer for their positive assessment and for the helpful comments provided during the review process.