Author Response to Reviews of

If you build it who will come? Equity analysis of park system changes during COVID-19 using passive origin-destination data

Authors
Journal of Transport and Land Use, 8606

RC: Reviewer Comment, AR: *Author Response*, ☐ Manuscript text

We are grateful to the two anonymous reviewers for their review and consideration of the manuscript. In this document we have highlighted additions text of the manuscript with blue letters and ~~text removed from the manuscript with red letters.~~

As a general change from the first manuscript, we have updated the library used to generate our maps, resulting in minor changes to the presentation but not the content. A few minor typographical errors have also been corrected.

1. Reviewer B

RC: This study aims to evaluate how converting roadway facilities into open pedestrian spaces affects park accessibility and the socio-spatial distribution benefits of those changes. The authors use StreetLight data from Alameda County, California to estimate a park activity location choice model, from which they construct their park accessibility measure. They find that Alameda Countys street conversions have disproportionately benefited Black, Hispanic, and low-income households. Overall, this is a good paper with a path to publication.

AR: *We are grateful that the reviewer found our paper worthwhile.*

1.1. Literature

RC: The intro paragraph to the Literature section only mentions two literatures when in fact there are three subsections of literature discussed. It would be useful to include a synthesis of the literature on sociodemographic variation in park utility at the end of section 2.1. Good review of the literature on measuring accessibility.

1.2. Methodology

RC: Utility-based accessibility is a good framework for analyzing the distributional benefits of street conversions, and the authors generally do a good job of explaining and supporting that methodological choice. However, the paper would benefit from additional explanation on at least three issues.

RC: First, it is unclear to me whether the same 10 additional parks are used for each synthetic choice makers choice set, or whether a new random selection of 10 additional parks is done for each choice maker.

RC: Second, the authors should discuss how reasonable their selection of choice sets is. I understand that its impractical to estimate a choice model with 500 alternatives. But how realistic are the choice sets of 10

randomly selected parks? Is there a way to generate more realistic choice sets without biasing the model results?

RC: Third, the authors should provide more justification for their choice of cost coefficient since there are no cost variables in their model. Why is the chosen cost coefficient reasonable and not arbitrary? Did the authors explore other options?

1.3. Results

RC: Should the ratio of coefficients be reversed (p. 16)? Shouldnt the coefficient for the desired amenity (in this case increased park acreage) be the numerator, divided by the coefficient for the cost (in this case distance)? Using the ratios reported in the manuscript would imply that park visitors living in block groups with a high proportion of Black and low-income residents would be willing to travel farther for bigger parks than others, contrary to the authors conclusion that they are considerably more sensitive to the distance to a park (p. 20).

RC: In the equity analysis, the authors should explain how they calculated the benefit "for simply having more options" (p. 20). They should also provide a citation for the proposition that "[o]ne property of logsum-based accessibility terms is that there is some benefit for simply having more options" (p. 20).

RC: I suggest caveating the presentation of monetary benefits. Many readers might find these numbers difficult to understand and/or arbitrary (despite the preceding explanation of calculating consumer surplus in the methods section). How real are these dollar values? Do they suggest that the total value of the street closures is just $664,628? From my perspective, the strength of the consumer surplus analysis is not in presenting dollar values. The strength is that it allows an estimation of the distribution of benefits, which could be done regardless of the value of the cost coefficient.

RC: The block group segmentations indicate that the utility equations could be different for different groups. That also affects the equity analysis. It is likely that not all residents of each block group will benefit similarly from the COVID-19 street closures. This would affect the distributional equities. I suggest mentioning this caveat.

2. Reviewer E

RC: Thank you for the opportunity to review this manuscript. The authors assess the policy of converting roads into pedestrian open spaces streets in Alameda County, California, from an equity perspective. One of the main contributions from the manuscript is the clever use of travel behaviour data collected through mobile phone sensors to answer questions about equity at the intersection of mobility and land use planning. Another interesting contribution stems from their use of utility-based accessibility measures to address a timely theme that cuts across transport policy and questions of distributive justice. Despite having access to a wealth of data and proposing to answer an interesting research question with potential contributions to policymaking, the paper still needs substantial work to be considered for publication in the Journal of Transport and Land Use. I expect the comments I provide below help improve the manuscript.

AR: *We appreciate that the reviewer found our methodolgoy "clever" and our contribution "interesting." We are similarly grateful for the constructive criticism the reviewer provided.*

2.1. Surrounding Land Uses

RC: I am not persuaded by either the methodological choices made by the authors or their engagement with the academic literature on accessibility. Perhaps the most critical potential threat to internal validity consists of the author's assumption that residents in Alameda County will visit the recently pedestrianized spaces motivated by the same factors that encourage them to visit parks: recreation, exercise, and social interaction. One possible avenue to overcome this limitation could be to account for land uses, for instance, restaurants or retail spaces, around the destinations included in the analysis as a proxy for unobserved differences in trip purposes (e.g., shopping, exercising, and leisure) unavailable in passively collected mobile phones data. These factors, which can be paired with amenities found in parks, were not accounted for in the models presented, neither the potential consequences for their omissions in the conclusions inferred from the model results.

2.2. Travel Mode of Access

RC: Another strong assumption that also poses a tread to the research's internal validity is that residents who visit open spaces, including the ones the authors focus on, is that they will travel to these places by foot, and therefore penalizing all individuals by distance instead of travel time. Of course, accounting for travel times requires access to mode choice, which some travel behaviour and physical activity mobile applications can detect. One alternative to mitigate this problem, assuming that there is no information about mode choice, is to subset from the dataset those who had a higher likelihood of had conducted their trip by foot. If this was neither an alternative, it is imperative to include a paragraph discussing how the assumption that all walked to their destinations may compromise the analysis and conclusions.

2.3. Causal Effects

RC: Although the motivation is a particular policy and the word 'change' is in the title, it caught my attention that the authors' research design overlooks the time dimension. While cross-sectional analyses like the one presented can contribute to the academic literature, the paper does not account for time. For instance, classifying trips by whether they occurred before and after streets were banned to cars and open to only pedestrians and cyclists will provide results more attuned to the paper's motivation. Since the research design employed prevents authors from linking the policy in question with particular behaviours and preferences, any language suggesting cause-and-effect must be edited to reflect the nature of the research design employed.

2.4. Accessibility Theory

RC: Regarding the concept of accessibility and the particular ways scholars have attempted to operationalize it, the authors need to explain better why cumulative opportunities measures are inferior in the context of the research question the manuscript attempts to answer. It is not enough to say: "However, they [cumulative opportunity measures] may be too simple, especially concerning trip costs near the threshold." For example, a person living in front of the park may have the same accessibility level that another living 9 minutes away from the same park if the objective of the analysis is to measure how many parks can be accessed within a predefined (or normative) travel time threshold. I recommend expanding this section of the literature review to other works that move from pure methodological discussions to more theoretical ones. One start point could be the paper titled "Measuring accessibility: positive and normative implementations of various accessibility indicators" by Páez et al. (2012). The work of transportation scholars Rafael Pereira or Ahmed El-Geneidy on accessibility may be of help as well.

2.5. Equity Evaluation

RC: Another significant omission is the definition of equity that guides the analysis. Please refer to the paper titled "Distributive justice and equity in transportation" by Pereira et al. (2017) for a thorough discussion on the issue. Other two relevant sources are the Taylor and Tassiello Norton (2009) article "Paying for Transportation: What's a Fair Price?" and "Environmental Injustice and Transportation: The Claims and the Evidence" by Schweitzer and Valenzuela Jr (2004).

References

A. Páez, D. M. Scott, and C. Morency. Measuring accessibility: positive and normative implementations of various accessibility indicators. *Journal of Transport Geography*, 25:141–153, 2012.

R. H. Pereira, T. Schwanen, and D. Banister. Distributive justice and equity in transportation. *Transport reviews*, 37(2):170–191, 2017.

L. Schweitzer and A. Valenzuela Jr. Environmental injustice and transportation: the claims and the evidence. *Journal of planning literature*, 18(4):383–398, 2004.

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