Fw: Decision on submission to Transportation Research Part D

E. Desjardins <desjae@mcmaster.ca>   Mon, May 24, 2021 at 5:30 PM
To: paezha <paezha@gmail.com>

The paper has received comments from 3 reviewers. The recommendation is to revise and resubmit! We can discuss further on Thursday. Hope you had a good weekend.

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BRIGHTER WORLD

McMaster University

From: em.trd.295f.738393.0f3102e1@editorialmanager.com <em.trd.295f.738393.0f3102e1@editorialmanager.com> on behalf of Robert Noland <em@editorialmanager.com>
Sent: Monday, May 24, 2021 1:33 PM
To: E. Desjardins <desjae@mcmaster.ca>
Subject: Decision on submission to Transportation Research Part D

CC: alex.karner@utexas.edu

Manuscript Number: TRD-D-21-00529

Examining spatial equity of bike share: a balanced floating catchment area approach

Dear Ms. Desjardins,

Thank you for submitting your manuscript to Transportation Research Part D.

I have completed my evaluation of your manuscript. The reviewers recommend reconsideration of your manuscript following revision and modification. I invite you to resubmit your manuscript after addressing the comments below. Please resubmit your revised manuscript by Jun 23, 2021.

When revising your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments and provide suitable rebuttals for any comments not addressed. Please note that your revised submission may need to be re-reviewed.

To submit your revised manuscript, please log in as an author at https://www.editorialmanager.com/trd/, and navigate to the "Submissions Needing Revision" folder under the Author Main Menu.

Transportation Research Part D values your contribution and I look forward to receiving your revised manuscript.

Kind regards,

Robert Noland

Editor-in-Chief

Transportation Research Part D

Editor and Reviewer comments:

Reviewer #1: This study examines the equity dimension of the bikeshare system in Hamilton, Ontario. The main contribution of this paper, claimed by the authors, is the application of a balanced floating catchment area approach. Another interesting point may be that the case study system included an equity initiative. This is certainly a relevant topic, and it fits the scope of this special issue. However, there are some significant drawbacks that the authors must address.
1.   The major contribution lies in the application of a balanced floating catchment area approach. This approach is NOT original per se, but borrowed from the health equity literature. However, I could not see the benefits of this method after going through the paper. Particularly, there are many accessibility models in the transportation literature. At least a quantitative comparative analysis is needed to persuade me.
2.   This leads to my second comment. Since the paper does not contribute to a new method, the emphasis should then be on the policy implications. However, I could not see much new insights from the current analysis. There are some discussions in Section 6, but I think they could be improved.
3.   If you use disaggregated data for accessibility modeling, why do you aggregate them for equity analysis? The literature you cited (e.g., Chen et al., 2019) shows that aggregating individual data to zonal levels would lead to biased equity analysis results. There are approaches to disaggregate zonal data using socioeconomic attributes (income in this case) as control variables. This way, you would be able to analyze equity with disaggregated data as well.
4.   The distance threshold seems to be an important factor, but I could not see how it is used in the accessibility modeling. This prevents me from understanding the results. For example, why as the walking distance threshold increases, the accessibility decreases? Why are there no differences between the with equity stations and without equity stations scenarios in figures 6-8 but in figures 9 - 12?
5.   The literature review is very comprehensive but loosely organized by jumping from one topic to another. Please reorganize it to emphasize on what the research gaps are.

Minor:
6.   In the highlights, you use terms, e.g., "PBSP", "equity stations", as everybody knows about what they are. You also use "equity stations" in the paper too way before it is defined. Also, what are horizontal and vertical accessibility?
7.   Page 15, lines 21 and 26, these two equations look the same to me.
8.   Page 16, the authors say that "we employ a hybrid location-based and person-based approach to calculating accessibility using disaggregated population data". I do not understand.
9.   Section 4.2 does not offer enough information to understand how the data is disaggregated. I could not see how well the disaggregated population fit the original population distribution. Maybe some summary statistics should be provided.
10.   The accessibility scale in figures 6-8 should be unified to allow for a comparison.
11.   The use of bivariate choropleth maps could be confusing.

Reviewer #2: This is a well-written paper using appropriate methods to address an important question that is a good fit for Transportation Research Part D. I commend the authors on a job well done. I have only a few minor comments and suggestions:
1)   Pages 9-10: The number of stations in the system and when they were added is very confusing: Line 33 of Page 9 says there were initially 115, then line 18 of Page 10 says that 13 equity stations were added, then line 40 of Page 10 says there were 130 stations and line 48 says that 12 of the 130 are equity stations. Can you clarify?
2)   Throughout: The maps are evocative, but also hard to follow. A few suggestions here:
a.   Can you provide a background layer that indicates where Lake Ontario is, etc?
b.   In the first bunch of figures, the map including the equity stations are the top panel, then in the second bunch, they're the bottom panel. Can you be consistent about which is which?
c.   Figure 5 is pretty uninformative because so few stations are within a 3 minute walk - can you either zoom into an area where there's meaningful variation or move the figure to an appendix and acknowledge

that it's uninformative?

d.   The color palette for Figures 9-12 is not distinct enough - I had a hard time telling what was blue and what was green

3)   Page 20: The number of accessibility doesn't make sense - given 130 racks total, there's no way there are 25.2 racks per person the way I'd conventionally interpret that number. Can you clarify the interpretation of the accessibility metric using the FCA method?

4)   Page 22: Numbers for accessibility within 15 minutes look wrong - I wouldn't expect there would be fewer racks per person for a longer walking distance

Reviewer #3: This manuscript demonstrates a method for evaluating proximity to public bike share stations in Hamilton, Ontario. I recommend major revisions.

The literature review should be edited for clarity. It currently has multiple issues.

Consider using subheadings to better organize the material. It feels imbalanced that section 3 is split into so many different subsections while section 2 is not.

The discussion of different types of equity beginning at the bottom of p. 4 is confusing. Beginning on l. 42, the authors introduce horizontal and vertical equity—both of which are referred to in terms of spatial distributions of stations but then the discussion of Qian and Jaller (2020) transitions to questions of use. These are not the same and should be properly differentiated (spatial distribution/access versus use/outcomes). The Philadelphia study by Caspi and Noland (2019) showed fewer trips from low-income block groups, but is this definitive evidence of inequity?

Section 3.5 should be folded into the literature review and used to motivate the piece. Also review section 4.1 and pull relevant literature review into section 2. The methods and data section should not include novel discussion of the literature. If your contribution is methodological, the reader should know this once they have completed reading the literature review.

The way that accessibility is employed in this paper—as access to a bike share facility—is different from how it is commonly conceptualized in the academic literature. The literature typically examines access to opportunities by linking travel impedance with some notion of a destination's desirability (e.g., total jobs, presence of a grocery store, etc.). Here, the metric you propose is capturing proximity to infrastructure. This is an important distinction to make, as completing a fuller accessibility assessment would require data on cycling infrastructure that is likely to be difficult to obtain and parse.

Figure 1 is not helpful – latitude/longitude are not needed on the x and y axes. (Figure 4 redundantly labels the X and Y axes as well.) Provide an inset map showing the broader context, a scale bar, and north arrow. You might consider adding other contextual features—major roads, surrounding cities, etc. These comments apply to all of the map-based figures in the manuscript.

Figure 2 should show the blue/green meaning in the legend. Overlapping circles and very subtle differences in size make the figure hard to interpret.

Figure 3 and 4 and Table 1 are not necessary and should be omitted or moved to supplementary material. If needed, population density could be included in Figure 2.

Figures 5-8 would be easier to interpret if a discrete, rather than continuous, scale was used. Think through whether a quantile plot, natural breaks, or some other discrete categorization scheme would be more appropriate for elucidating differences in accessibility. A map that shows differences between the two scenarios would be more illuminating than the current map where changes are almost impossible to discern. Why do the units of accessibility shift so dramatically in magnitude and can the units be labeled?

Figures 9-12 are very difficult to interpret. Further, they do not give a sense of how many people experience each accessibility level. Table 2 contains much more information than the figures and should be retained while the figures could be moved to supplementary material. This income-based analysis raises questions about that presented in section 5.1. Exactly how does that analysis and its results provide equity-related insights?

The discussion at the bottom of p. 31 and top of p. 32 is confusing. These are not recommendations that come from your study and it's not clear how the "gaps in coverage" relate to the findings you present.

Overall, the paper feels too long. Streamlining the analysis and exposition should allow you to cut 1-2 thousand words.

Minor comments
= Horizontal equity is not served merely by "growing the population served irrespective of the walking threshold" (p. 29, l. 23). Rather, it requires equalizing accessibility across groups considered equal in ability or need. If you define the entire population as a group, then horizontal equity quickly loses meaning because we would need to provide service/racks where demand would be very low in order to achieve it. Reconsider whether horizontal equity is an appropriate concept for use in this context.
= The idea of "absorption of disparities" has been articulated elsewhere in the transportation/EJ literature (e.g., Forkenbrock & Sheeley, 2004; Rowangould et al., 2016).
= Using the word "recent" to describe prior work will quickly date the paper. Use different terms. This is an issue at a number of locations in the paper. For example, on p. 7, ll. 35-39 the word "recent" is used to refer to a 15-year-old publication.
= All equations should be numbered and referred to explicitly.
= p. 6, l. 55: Use a more neutral phrase instead of "able-bodied." See https://ncdj.org/style-guide/.
= p. 19, l. 13: I think you mean "network travel times" instead of "of travel times."

References
Forkenbrock, D. J., & Sheeley, J. (2004). Effective Methods for Environmental Justice Assessment. National Cooperative Highway Research Program.
Rowangould, D., Karner, A., & London, J. (2016). Identifying environmental justice communities for transportation analysis. Transportation Research Part A: Policy and Practice, 88, 151–162.

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