

Author Response to Reviews of

The Effect of Transit Signal Priority on Bus Rapid Transit Headway Adherence

Authors

Transport Findings, 1425003

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~~. In the original manuscript, we unfortunately neglected to acknowledge UDOT and UTA's role in this study. We have also acknowledged several open-source packages used to create the tables and figures in the report.

1. Reviewer #1

1.1. Contributing Factors

RC: On page 2, the second reserach question: I think the list of contributing factors that you evaluated was finite. Perhaps list the other factors you evaluated here rather than saying etc.?

AR: *This is a good point. The article now reads as follows:*

- Does schedule-based TSP improve headway adherence for rapid transit systems?
- What ~~other factors influence headway adherence: direction, dwell time, etc.~~ is the effect of other controlling factors — specifically time period, direction of travel, and cumulative stop dwell time — on headway adherence?

1.2. Numeric Precision

RC: On page 5, “headway is 4.649 minutes”. Consider if there might be a better way to present this data. Thousandths of a minute may be a bit uncommon.

AR: *We agree that this could be overly precise, though we feel it is important to precisely match the digits presented in Table 2 (where the precision should be tempered with an understanding of the variance in the estimates as given by the t-statistics). We have added a parenthetical clarification,*

For example, the 10th-percentile headway is 4.649 minutes (4 minutes and 39 seconds), all else equal.

2. Reviewer #2

2.1. Typo

RC: p. 3 second to last paragraph– 4 thresholds should be 3 thresholds, right?

AR: Yes, thank you for identifying this typo.

The median of the distribution for all ~~four~~three thresholds is remarkably similar and is just a few seconds behind the target headway.

2.2. Previous Research

RC: You cite agreement with Schultz et al (2020) but you don't mention that Sheffield et al (2021) argued that the 0 min threshold offered the best improvement. The authors' views on the reason for the discrepancy (or agreement) would be helpful.

AR: *Thank you for noticing this subtle difference in previous findings. Sheffield et al. (2021) identified that a zero-minute threshold was the preferred option for an arterial-based local bus route operating on a fifteen minute frequency. It is possible that the high frequency of a BRT combined with the signal controller logic which rejects consecutive TSP requests makes the 2-minute threshold marginally more effective. Additionally, note that a 0-minute TSP request threshold is not the same as always requesting TSP: UVX is allowed to run ahead of its schedule. A 0-minute request threshold on UVX was not a part of this experiment, but it is possible that it would perform better than the 2-minute or the "always" options. We have added the following clarifying sentence to the findings:*

This finding echoes the schedule-based TSP analysis of UVX by Schultz et al. [1]. A finding by Sheffield et al. [2] that a 0-minute threshold is best on arterial bus systems may only apply to routes with longer headways.

References

- [1] Grant G. Schultz, Michael H. Sheffield, David Bassett, and Dennis L. Eggett. Impacts of changing the transit signal priority requesting threshold on bus performance and general traffic: A sensitivity analysis. Technical Report UT-20.06, Utah Department of Transportation Research & Innovation Division, 2020.
- [2] Michael H. Sheffield, Grant G. Schultz, David Bassett, and Dennis L. Eggett. Sensitivity analysis of the transit signal priority requesting threshold and the impact on bus performance and general traffic. *Transportation Research Record*, January, January 2021. doi: 10.1177/0361198120985853.