

Research Report Summary



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Development and Evaluation of Infrastructure Strategies for Safer Cycling

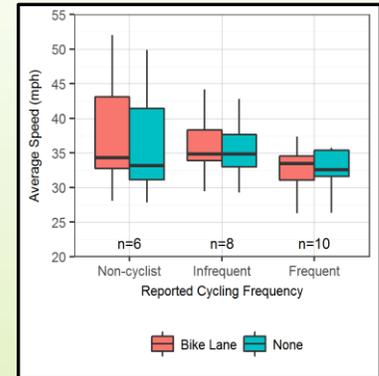
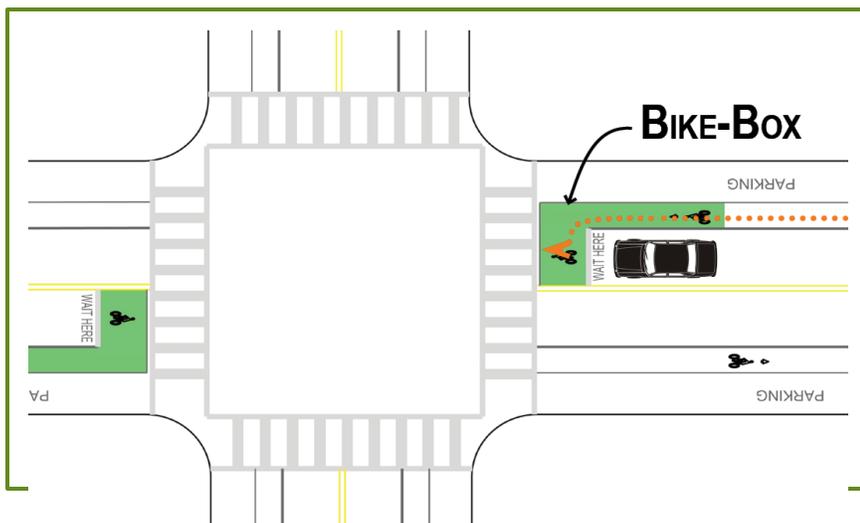
Evaluation of driver behavior using a driving simulator

This study investigated driver behavior towards four common bicycle-accommodating surface treatments: bike lanes, sharrows, bike boxes, and merge lanes. The overall purpose of these surface-painted bicycle treatments is to bring awareness of cyclists to drivers on shared roadways. The presence of these treatments should instruct drivers to expect cyclists and to adjust their driving behavior accordingly.

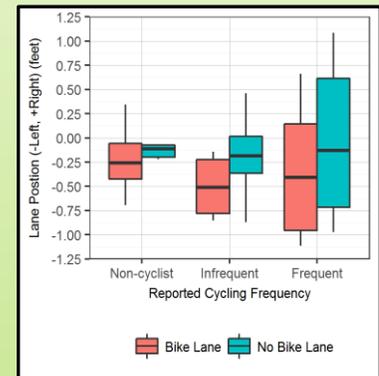
Although drivers did not directly

interact with cyclists in the simulation, the results of this study showed that driver behavior is significantly affected by their prior experience with the treatments, or as a cyclist.

The results suggest that these treatments can be more effective if more drivers understand their function. This can be accomplished through improved signage, educational campaigns, or public engagement.



Speed vs cycling frequency

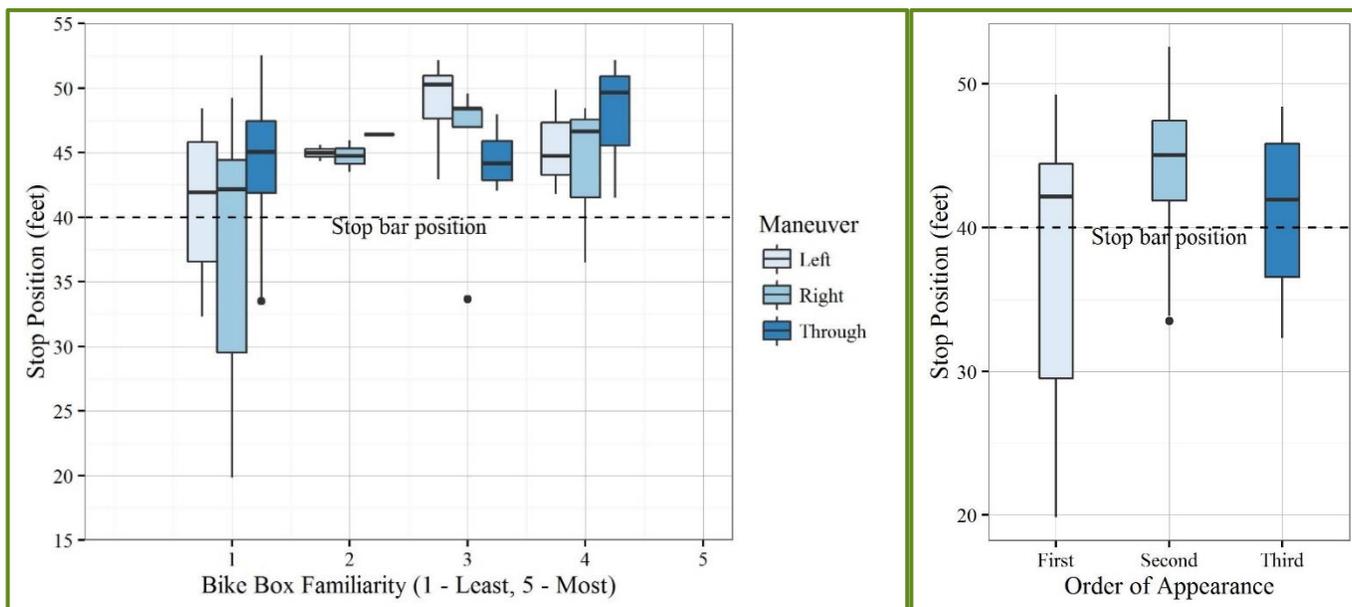


Lane position vs cycling frequency

Non-cyclists tended to drive faster and less variably within lanes.

In transportation, the preferred response of drivers encountering unfamiliar infrastructure would be to make an overly safe reaction automatically. However, an alarming result of this study was that drivers typically reacted poorly when encountering unfamiliar infrastructure, such as failing to stop behind the advanced stop bar. However, in the opposite scenario, where drivers were very familiar with a treatment, such as bike lanes, drivers' behavior changed very little.

“The results of this study showed that driver behavior is significantly affected by their prior experience with the treatments, or as a cyclist, suggesting that these treatments can be more effective if drivers have a better understanding of the treatment’s function.”



Unfortunately, results for merge lanes and sharrows lacked significance. It was found that driver behavior did not change when encountering these treatments. Despite the lack of behavioral change, eye-tracking results did show that drivers made visual contact with merge lanes and sharrows. Participants made glances at the first appearance of merge lanes and sharrows, but not at subsequent appearances. This is promising, suggesting that drivers were not distracted by the treatments, but instead acknowledged the presence of the treatments and returned their attention to driving. It is possible that the acknowledged presence of the treatments prepares the driver for interaction with a cyclist. Future studies should investigate how the presence and interaction with a cyclist along with these treatments affects driver behavior.

References

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