

Effectiveness of Rectangular Rapid Flashing Beacons (RRFBs) at Mid-Block Crosswalks

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Introduction

Rectangular Rapid Flashing Beacons (RRFBs) are designed to improve safety by increasing drivers' awareness of pedestrians in mid-block crossings using a pedestrian-activated signal. However, little is known about their effectiveness in rural contexts, and it has been suggested that they may increase risky crossing behavior by pedestrians who assume that motorists are responsive to the beacon. This study evaluates the effects of RRFBs on driver and pedestrian compliance and risky behaviors compared with traditional mid-block crossings without RRFBs. We evaluate these outcomes in Vermont's rural context, including small cities, villages, and town centers and rural/urban transition zones.



Figure 1. Example of RRFB location and treatment (left). A camera set up for data collection (right).

Methodology

We use a controlled before-after study design to evaluate RRFBs' effectiveness in rural contexts at six locations across Vermont. For each RRFB installation, we also evaluate a similar "control" location that does not change over the study period. This ensures that the differences that we observe are attributable to the RRFB installation rather than to extraneous factors such as seasonal changes. We evaluate RRFB effectiveness for pedestrian crossing events using video recordings collected over 4 to 10 days (Figure 1) in terms of the following observed outcomes:

- Compliance:
 - Driver yielding (rate and location)
 - Pedestrians crossing out of the crosswalk
- Risky behaviors:
 - Vehicles stopping suddenly
 - Pedestrians stepping into the roadway before drivers yield

Results

Overall, using a robust controlled before-and-after study design we found that RRFBs are effective for improving compliance and may be effective in improving safety in small and rural communities and in both centrally located areas and rural transition zones.

Figure 2 shows results for compliance at six study pairs. The counterfactual path shows the trend expected at the treatment location if no treatment had been installed based on the trend observed at the control location. The report is at: https://vtrans.vermont.gov/sites/aot/files/Research/Final_RRFB_Evaluation_March21_2023_0.pdf

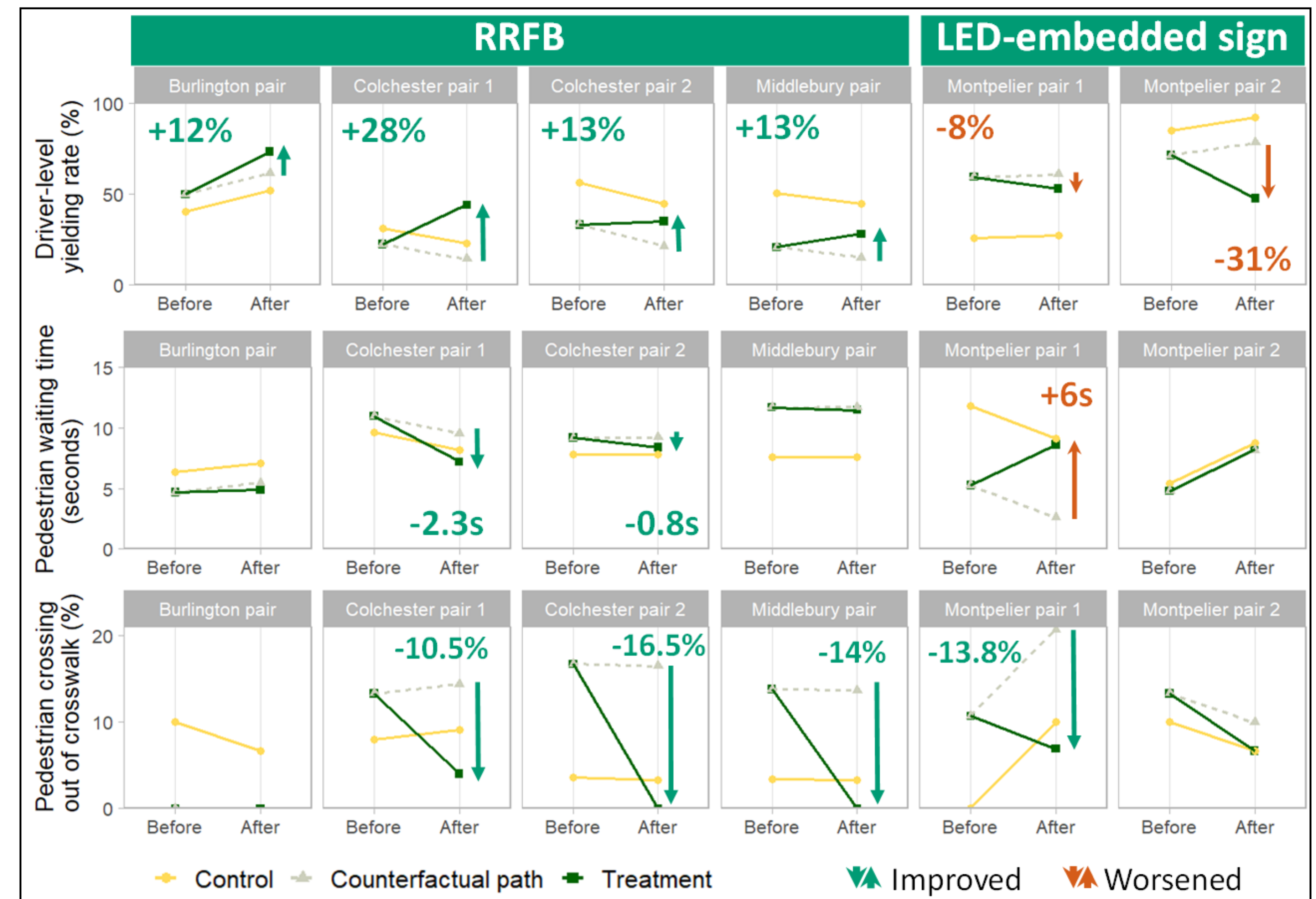


Figure 2. Results for compliance outcomes for six study locations

Acknowledgments

This study was funded by the Vermont Agency of Transportation (VTrans). The authors wish to thank Jon Kaplan, the Project Champion, and the VTrans Technical Advisory Committee for valuable input and guidance.