

Effects of red coloured bicycle lanes on lateral placement of road users

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Background and Aim

Many cities are choosing to color their bicycle lanes. However, we lack a research-based knowledge on the impact of coloured bicycle lanes on both motorists and cyclists' behaviour, such as their lateral positions. Most of the authors looked at the effects of the bicycle lane presence on lateral distances, not considering the characteristics of bicycle lanes, such as their colours. Therefore, we aim at filling that gap by exploring the effects of bicycle lanes with either a red-surface or a conventional-asphalt on lateral distances in passing encounters (LPD) and also for uninfluenced road users (LD) on selection of mid-section urban road sites in Oslo.

Methods

We used observational data and applied a combination of analytical approaches to these. We tested the hypothesis with a cross-sectional approach (using the data from eight unique sites). Furthermore, in order to explore the findings, we conducted before-after analyses on four sites. To account for potential effect of vehicles width/size on lateral positions, we distinguished between several categories of motorized vehicles.

Results

External video observations, provided 184 hours of video data from 9 sites. We measured LD of uninfluenced road users and in passing encounters manually, using 20 cm grids developed in T-Calibration software. LPD between cyclists and different types of motorised vehicles were measured in 1 042 passing encounters. Mean LPD were larger than 1.50 m on all sites for all road user types (except on one site in van-bicycle encounters), indicating mutual respect between road users. We found that motorised vehicles perform an overtaking manoeuvre and cyclists increase their lateral distance from the traffic lane in passing encounters. We did not find any consistent effect of red colour of bicycle lane on the lateral positioning of motorised vehicles or cyclists. Before-after analysis indicate that cyclists tend to keep relatively stable distance from the curb, even if the width of the lane changes.

Conclusion

The observations of road users under real traffic conditions provided uninfluenced data about their behaviour in passing encounters and about their lateral positions in bicycle and traffic lanes. The findings should be considered when implementing or adjusting on-road bicycle lanes in urban areas, both regarding the widths and colours.