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ENGLISH

Summary

Cycling on red and interactions with trucks

Video observations at two signalised intersections in Oslo

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- A total of 282 cyclists were observed at two signalised intersections in Oslo. Proceeding on red was common, particularly among cyclists turning right.
- At Langkaia–Operagata, 74% of cyclists who encountered a red signal proceeded on red, including 89% of right-turning cyclists. At Ensjøveien–Gladengveien, 67% proceeded on red, including 77% of right-turning and 57% of straight-travelling cyclists.
- No consistent differences between female and male cyclists were identified. Some differences in red-signal behaviour were observed at Langkaia–Operagata, but these were not found at Ensjøveien–Gladengveien. No systematic difference between female and male cyclists was evident in their encounters with trucks, although the number of observations was too small to draw firm conclusions.
- Cyclists proceeding on red adapted their trajectories in several ways, including changing position and using sidewalks and pedestrian crossings.
- A total of 66 truck–bicycle encounters were analysed. At Langkaia–Operagata, most involved cyclists proceeding on red, while five involved truck drivers turning right on red. At Ensjøveien–Gladengveien, four encounters involved truck drivers failing to yield to cyclists travelling straight.
- Signal control and intersection design should account for actual road-user behaviour rather than rely solely on perfect compliance and should reduce situations in which safety depends on interactions between cyclists and turning motor vehicles.

This study examined cycling behaviour at two signalised intersections in Oslo: Langkaia–Operagata and Ensjøveien–Gladengveien. The study focused on cyclists' behaviour at traffic signals, potential differences between female and male cyclists, and encounters between cyclists and right-turning trucks. The motivation for the study included previous research indicating differences between female and male cyclists in signal compliance, as well as Norwegian accident data showing a relatively high involvement of female cyclists in serious collisions with trucks.

Cyclist behaviour was analysed using video recordings collected at the two intersections in June 2025. The intersections differ in geometry, signal control, traffic conditions and typical cyclist movements and were therefore analysed separately. Cyclists' signal behaviour, direction of travel and trajectories through the intersections were manually coded. Truck–bicycle encounters were identified from 135 hours of video recordings and analysed according to the

sex of the cyclist and the behaviour, movement and relative position of the cyclist and the truck.

Proceeding on red was common, particularly among cyclists turning right. At Langkaia–Operagata, 74% of cyclists who encountered a red signal proceeded on red. The proportion was 89% among right-turning cyclists, while no straight-travelling cyclists were observed proceeding on red during the analysed period. At Ensjøveien–Gladengveien, 67% of cyclists who encountered a red signal proceeded on red, including 77% of right-turning and 57% of straight-travelling cyclists. Cyclists proceeding on red also adapted their behaviour by changing position and using sidewalks and pedestrian crossings.

Some differences between female and male cyclists were observed, but these were not consistent across the two intersections. At Langkaia–Operagata, male cyclists were more likely than female cyclists to proceed on red and were more likely to move onto the sidewalk. At Ensjøveien–Gladengveien, red-signal behaviour was very similar among female and male cyclists. The results therefore do not indicate a consistent difference in red-signal behaviour between female and male cyclists across the two sites.

In total of 66 truck–bicycle encounters were identified: 48 at Langkaia–Operagata and 18 at Ensjøveien–Gladengveien. The encounter mechanisms differed substantially between the intersections. At Langkaia–Operagata, cyclists and right-turning motor vehicles have separate green phases, and most encounters occurred when right-turning cyclists proceeded on red while trucks proceeded on green. Five encounters involved truck drivers turning right on red, including three in which both the cyclist and truck driver proceeded on red. Cyclists responded by slowing down and allowing the truck to turn, moving onto the sidewalk, passing the truck on its nearside or otherwise adjusting their position.

At Ensjøveien–Gladengveien, cyclists travelling straight and right-turning motor vehicles receive green concurrently. Most encounters involved trucks initially stationary at the signal, with cyclists generally moving ahead of the truck after the signal changed to green. In four of the five encounters in which both the cyclist and truck were moving along the approach, however, the truck driver did not yield to the cyclist, who slowed down or stopped in response. No systematic difference between female and male cyclists was evident in their encounters with trucks. Some differences were observed at Langkaia–Operagata, but the number of observations, particularly at Ensjøveien–Gladengveien, was too small to draw firm conclusions.

The findings show that cyclist behaviour and truck–bicycle interactions are strongly related to the specific traffic situation and signal arrangement. Intersection design should therefore not depend exclusively on perfect compliance but should also account for actual road-user behaviour and errors. Signal control and geometric design should aim to minimise unnecessary waiting, provide cyclists with clear and convenient routes through intersections, and reduce situations in which safe interaction depends on cyclists and turning motor vehicles correctly detecting and yielding to each other.