

Summary

Parking spaces for e-scooters in Drammen

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Authors: Katrine Karlsen & Espen Johnsson

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In Drammen municipality, incorrectly parked e-scooters are perceived as the biggest challenge with shared e-scooters. Twenty parking spaces for e-scooters were painted in the center of Drammen in June 2021, aiming to improve parking. TOI has evaluated the impact on the parking pattern using GPS-data from e-scooter operators. The results show that the parking pattern becomes more concentrated in the area, and that e-scooters are parked closer to the parking spaces. However, the effect is limited to the immediate vicinity, and local conditions at the sites may reduce the impact of the painted spaces.

E-scooters have become a popular means of transport for many, partly because the “free-floating” system means that you can park anywhere. However, incorrectly parked e-scooters can cause issues for other road users. Parking spaces for e-scooters can give a clear signal of where one should park, and can contribute to better parking.

The biggest challenge Drammen municipality experiences with shared e-scooters is incorrect parking. During June 2021, 20 parking spaces for e-scooters were painted in the center of Drammen.

We have analyzed the parking pattern based on GPS-data for all trips completed with shared e-scooters in Drammen from May to October. The analyses covers three periods, one before parking spaces were painted and two after:

- Before: 19.05 - 22.06
- After 1: 30.06 - 03.08
- After 2: 11.08 - 14.09

The first after-period largely covers the summer holidays. We included a second after-period to evaluate the effect outside the holidays, and over time.

Fifteen of the parking spaces were in areas with free parking, and these were analyzed collectively. In addition, there were five parking spaces in areas with controlled parking, where geofencing defines no-parking areas. One parking space was excluded because the GPS-zone was incorrect. Of the remaining four, two had parking signs in the before period, while the last two had no physical marking. We have therefore not analyzed these parking spaces collectively.

For each completed trip, we calculated the distance between the end point of the trip and the nearest painted space. The number of trips increased significantly during the period studied, and we therefore evaluate the effect of the parking spaces through changes in percentage rather than absolute numbers.

To examine to what extent the parking spaces concentrate parking in the areas, and to be able to compare with previous analyzes, we compare the proportion parked 0–20 meters (m) versus 20–70 m from the painted spaces in the three periods. The inner limit of 20 m is set to take into account inaccuracies in the GPS coordinates. The outer limit of 70 m is set because the effect decreases with increasing distance, and to limit the amount of irrelevant parking cases. The same analysis was done for parking measures in Oslo in 2020.

For each of the parking spaces, we have calculated heat maps that show the relative density of parked e-scooters in the three time periods. The heat maps show the parking pattern

around each parking space in each period and are based on relative density at each location, not absolute numbers.

The results show that the parking is more concentrated in the after-periods, and that people park closer to where the parking spaces were painted. Overall, there is little difference between the two after-periods. The effect occurs when the spaces were painted, and does not change much over time.

Looking at each location separately, there is some variation over time. This may be due to local differences in the use of the area, for example due to summer holidays. Around some of the locations there is little e-scooter use, especially in the before-period, and one must therefore be careful in interpreting the changes.

The parking spaces have a structuring effect on parking in the area, but the effect is local. Changes in ten-meter intervals from the spaces show that the effect is greatest in the nearest intervals, and seems to decrease around 50 meters from the painted spaces.

In a pilot study carried out in Oslo in 2020, we found that the effect decreased around 60-70 meters from the parking spaces. The effect thus appears to be more geographically limited in Drammen. Nevertheless, we see that the increase in the proportion who park near (within 20 meters of) the parking spaces is similar to the effect in Oslo.

A possible explanation for the fact that the parking spaces appear to influence in a smaller area in Drammen than in Oslo, may be that several of the parking spaces in Drammen are along streets. In Oslo they were mostly placed in squares or open areas. Parking spaces in open areas are likely visible over greater distances than parking spaces along streets. In addition, it may be more natural for people to cross an open area to park than to look for parking spaces in parallel streets.

There are clear differences from location to location, both in the degree to which people initially park in the area, and in the extent the parking becomes more concentrated. The impact of painted spaces appears to be reduced if people have a clear desire to park in another spot (e.g. near the entrance to a grocery store).

Painting of parking spaces in areas with controlled parking has varying effects. At Bragernes Torg, there were already parking signs to mark the approved locations, and adding painted spaces has had a limited impact on the parking pattern. At Strømsø Torg, parking has become more concentrated, especially around the parking space in the north part of the square. There were too few cases in areas with controlled parking to conclude about the effect, but the results indicate that physical marking of approved parking spaces reduces clutter.

Interestingly, heat maps also show that trips have, to a certain extent, been completed in no-parking areas, where geofencing should make it impossible to park. This indicates that the margins of error in the GPS signals allow for parking in prohibited zones, and illustrates that the technology currently in use doesn't make incorrect parking impossible.

For future studies, it will be interesting to look at variants of parking solutions, and ways to make parking solutions more visible. At the same time, it is interesting to take a closer look at local conditions that may affect the impact of a parking space in the area, for example whether there is a shop, a bus station or something else likely to influence parking behavior nearby.

The parking policy in Drammen does not include the use of incentives, in the form of rewards, for parking inside the spaces, nor any fees for parking outside dedicated spaces. Rewards appeared to have a beneficial effect during the pilot in Oslo, but their effects should be examined further in future studies.