

Survey results:

Traffic impact of Kottbusser Damm and Kottbusser Strasse pop-up cycle lane

Background situation:

The pop-up cycle lane on Kottbusser Damm and continuing northwards on Kottbusser Strasse in Berlin creates a connection between the central junctions of Kottbusser Tor and Hermannplatz. The cycle lane is one of the first pop-up cycle lanes in Germany and was established on both sides of the road and along the full length of both roads in April 2020.

Before the pandemic-related reconstruction, there had been years of discussion about the dangerous cycling situation. The situation on Kottbusser Damm was confusing due to free parking spaces on the right-hand side of the road; short-term stops and loading and unloading in the second row forced cyclists to repeatedly swerve into the busy left-hand lane. This often led to dangerous accidents and a low sense of safety for cyclists. Bicycle navigation apps always calculated routes avoiding Kottbusser Damm. On Kottbusser Strasse, there was a paved cycle lane along the pavement, which frequently led to conflicts between cyclists and pedestrians.

With the introduction of the new cycle lanes, the parking situation has changed: All parking spaces at the edge of the roadway have been removed, and instead there are delivery zones for the numerous adjacent shops and catering businesses, which can be used for parking at night. Residents were given the option of renting a reduced-cost parking space in adjacent multi-storey car parks.

A conversion of the provisional pop-up cycle lanes into permanent cycle lanes with a width of



Figure 1: Kottbusser Damm pop-up cycle lane. Photo: Frank Masurat, CC01.0



Figure 2: Kottbusser Damm permanent cycle lane. Photo: Lea Rocholl

2.50 m as well as safety dividing strips to stationary traffic was completed along both sides of Kottbusser Damm in June 2021. The pop-up cycle lane on Kottbusser Strasse was converted into a permanent cycle lane protected by raised buffers a few months later, in April 2022. At pedestrian crossings, the cycle lane was secured by steel bollards. Due to the width of the cycle lane including the safety dividing strip, the police and fire brigade can also use the cycle lane in an emergency.

Volume of traffic: Surveys commissioned by the Berlin Senate

The number, composition and speed of motor vehicles on Berlin's roads are measured at over 240 locations in Berlin using infrared detectors (so-called TEUs = Traffic Eye Universals). No counts are available for Kottbusser Damm, so the Berlin Senate Department for Transport provided modelled traffic volumes from a traffic volume model (IQ Mobility). The traffic volume model models hourly traffic volumes for all main roads on the basis of the Berlin traffic model (as at 2014) and the TEU detectors.

	Motor vehicle traffic volume before establishment of the cycle lane	Motor vehicle traffic volume after establishment of the cycle lane
Average daily traffic volume	19,856	17,677
Daily traffic volume on weekdays without holidays	22,923	20,009

Table 1: Data comparison of the average daily traffic volume (DTV) and the average traffic volume on working days (DTVw) without holidays before and after the establishment of the pop-up cycle lane.

The data shows a reduction in the average daily traffic volume from just under 20,000 vehicles to just under 18,000 vehicles after the establishment of the pop-up cycle lane on Kottbusser Damm. This corresponds to a reduction of about 11 percent. If only weekdays that do not fall in the holiday season are

considered – i.e. the days with the most traffic – a reduction of as much as 12.7 percent in the number of vehicles can be seen. On the days with the highest traffic volume, almost 3,000 fewer motor vehicles use Kottbusser Damm than before the cycle lane was established. It should be noted that the IQ model tends to underestimate absolute traffic volumes. However, the relative development is presented plausibly. Even though the data after the establishment of the cycle lane is determined, among other things, by the Corona situation, at no time did the motor vehicle traffic reach its volume from before the establishment of the cycle lane.

22,923 vehicles before pop-up cycle lane



20,009 vehicles after pop-up cycle lane

Cycle traffic counts using the Strava Metro mobility data platform.

The Berlin Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action (SenUVK) operates 17 automatic permanent counting stations for the continuous survey of bicycle traffic. However, there are no counting stations on Kottbusser Strasse and Kottbusser Damm, so other data sources have to be used to quantify the development of cycle traffic. For this purpose, data from the Strava Metro mobility platform is used.

A comparison with the official figures from the Senate Department shows that Strava records slightly more than one percent of all cycling movements in Berlin - with the trend increasing. The proportion of movements recorded was calculated as an annual average and applied to the figures contained in Strava for Kottbusser Damm, so that a statement can also be made for streets that are not covered by the permanent counting stations.

The number of cyclists on Kottbusser Strasse was slightly higher than on Kottbusser Damm, as Kottbusser Strasse already had bicycle traffic infrastructure in place. While there were an average of 2,215 cyclists on Kottbusser Strasse in 2019, the number on Kottbusser Damm was only 1,990. Since the installation of the pop-up cycle lane, an average traffic volume of 2,783 cyclists per day was measured on Kottbusser Damm between April 2020 and the end of 2021. Thus, a 40 percent increase in cycling traffic is evident.

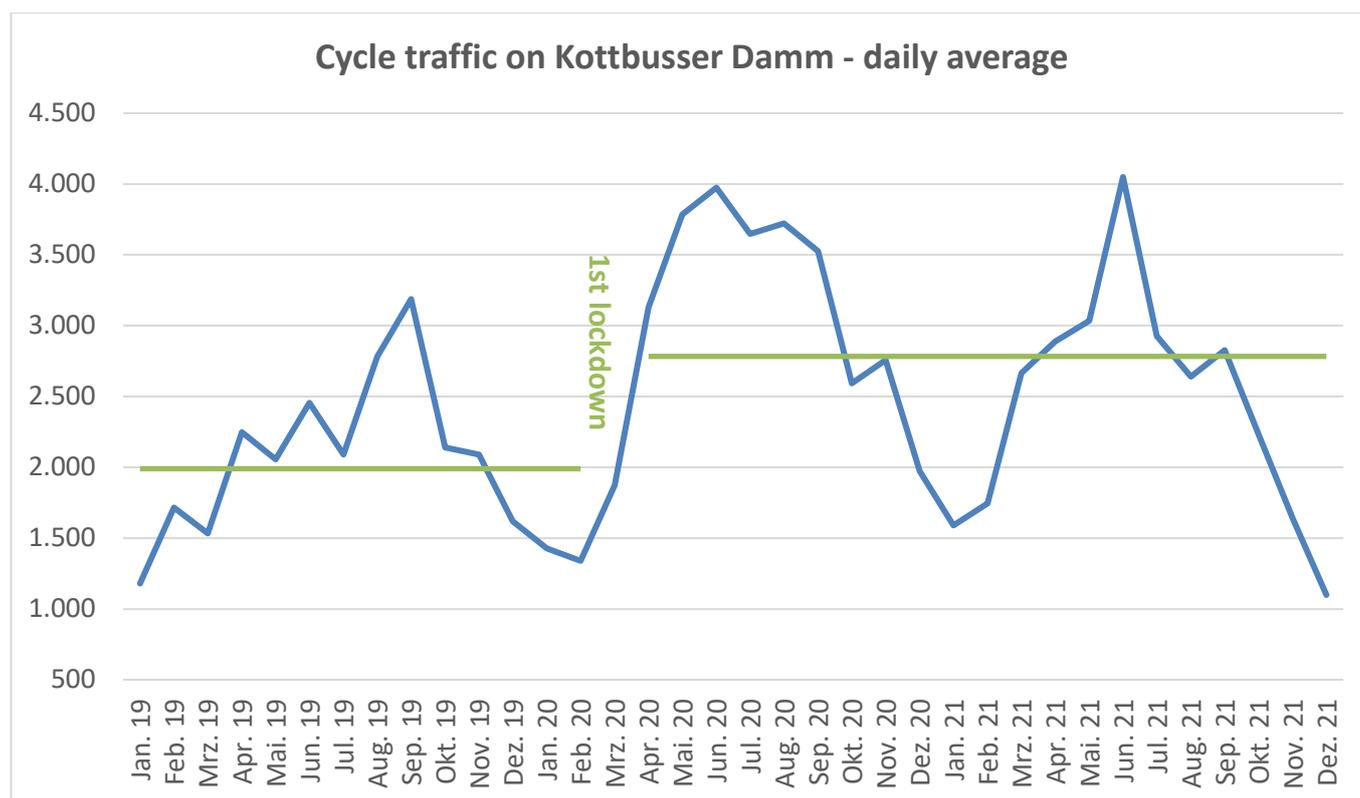


Figure 4: Development of cycle traffic on Kottbusser Damm - daily average. Data from Strava Metro and Berlin Senate Department for the Environment, Urban Mobility, Consumer Protection and Climate Action; Evaluation: Environmental Action Germany

For comparison: Throughout the whole of Berlin, cycle traffic increased by 22.6 per cent in 2020 compared to the previous year. However, this positive trend associated with the Corona pandemic changed again in the following year 2021. Cycling figures in 2021 were 10.5 per cent lower than in the record year of 2020. Especially in the summer months, the number of cyclists was significantly lower in 2021, presumably because the number of holiday trips increased considerably compared to 2020. This trend is also evident at Kottbusser Damm and Kottbusser Strasse, where the creation of safe and comfortable cycling infrastructure has led to a significantly greater increase in the number of cyclists.

2,783 bicycles after pop-up cycle lane



1,990 bicycles before pop-up cycle lane

Air quality: Nitrogen dioxide pollution in Berlin

The Institute for Advanced Sustainability Studies IASS Potsdam has investigated the establishment of the pop-up cycle lane on Kottbusser Damm in terms of its impact on nitrogen dioxide (NO₂) pollution. For this purpose, mobile measurements were carried out to determine representative results for the exposure of cyclists. The mobile measurements were carried out on both sides of the entire stretch of Kottbusser Damm and Kottbusser Strasse several times before and after the establishment of the cycle lane. The measurements started in February 2020 and were carried out over an 8-month period.

According to the IASS, NO₂ concentrations decreased from the measured period without the cycle lane until afterwards with the cycle lane by 10 µg/m³. The analysis of comparative measured values showed that 8.7 µg/m³ of this can be attributed to the establishment of the cycle lane. This corresponds to a reduction in air pollution of around 22 percent.

Classification:

According to the Senate Department, the annual average impact of the Corona pandemic on NO₂ pollution in the air we breathe is only 2 µg/m³. The reduction in NO₂ recorded in the local measurements thus clearly exceeds the effect of the Corona pandemic. In Berlin as a whole, NO₂ pollution has recently been on the decline in 2020. This reduction is partly due to the Corona pandemic. The measurements around Kottbusser Damm and Kottbusser Strasse show that the introduction of pop-up cycle lanes has contributed to a significant improvement in air quality – above and beyond the city-wide trend. According to the IASS analysis, the contribution of the pop-up cycle lanes to NO₂ reduction is 8.7 µg/m³.

The fear that the pop-up cycle lane would lead to more congestion and thus to higher NO₂ pollution is hereby refuted. The precise traffic lane counts show that the right-hand lane was previously only of limited use to the flow of traffic due to delivery traffic and double-parking. This meant that a lane that could only be used in sections for motor vehicle traffic was replaced by a lane that could be used continuously and permanently for bicycle traffic. A drop in the volume of motor vehicle traffic to 20,000 vehicles on high-frequency days (working days without holidays) was to be expected. After the introduction of the cycle lane, the traffic volume corresponds exactly to the capacity assumed by the guideline for the construction of urban roads for high capacity cross-section roads with one wide motor vehicle lane in each direction.

The increases in cycle traffic figures are significant, but still offer further potential for growth. The fact that the increase in cycle traffic on Kottbusser Damm, at 40 per cent, is lower than on comparable roads could be due, among other things, to the fact that navigation apps

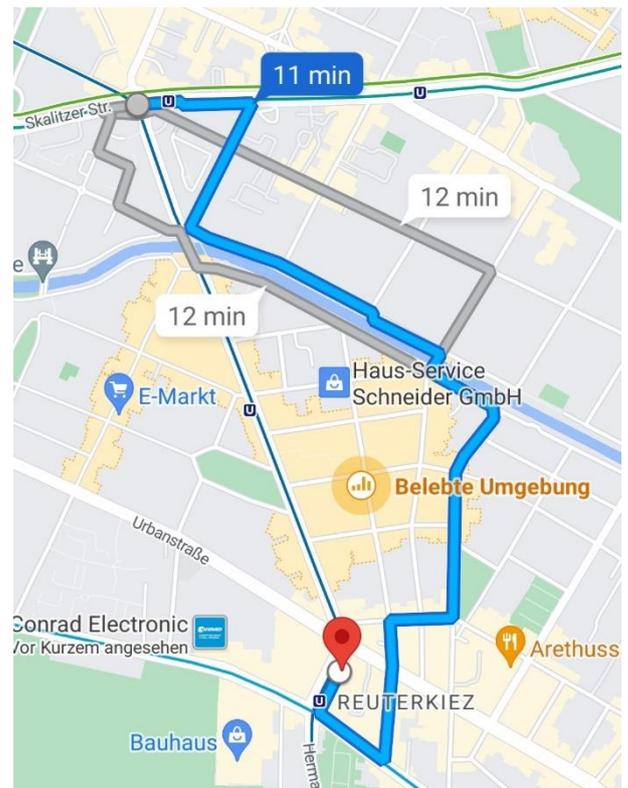


Figure 3: Suggested cycle route Hermannplatz - Kottbusser Tor avoiding Kottbusser Damm; Google Maps screenshot July 2022

such as Google Maps still recommended routes avoiding Kottbusser Damm even many months after the cycle lane was built. By adjusting the routing options, further increases can be expected even without changes to the infrastructure.

About the project:

DUH has been working since October 2020 on the project "Pop-up Republic: New Mobility Berlin", which is funded by the international association of cities ICLEI within the framework of the ICLEI Action Fund. The aim of the project is to collect, prepare and analyse environmental data in order to objectify discussions about the transition of mobility. The impact of new cycle lanes, with a special focus on pop-up cycle lanes, parking space management, neighbourhood traffic calming measures and 30 km/h speed limits on the volume and composition of traffic as well as on NO₂ pollution is investigated in order to be able to make informed statements about the impact on air quality and climate.



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