**Recommendation to the Transport for London on the Segregation of Shared Bus-Cycle Routes in Greater London**

Bristlecone Consulting Group, December 2022

Every day thousands of Londoners cycle through the urban core as part of their commute. Improving cyclist safety is therefore in the public interest. Our group has developed a dataframe that combines accident, traffic, and infrastructure data towards responding to cycling safety initiatives in Greater London. To showcase its usefulness to potential stakeholders, such as the Transport for London, we assess if safety in the urban core can be improved by separating cycling routes that are shared with bus routes in the urban core ("shared lanes"). These routes comprise 83% of the urban cycle routes in Greater London, and are therefore a worthy target for safety improvements. However, segregation of shared routes would be a major undertaking both from a time and financial perspective. To this end, our group compares the safety margin between shared and unshared routes in Greater London. Our findings indicate these two route-types have no significant difference in safety, and we would recommend consideration of alternative safety initiatives.

The analysis performed by our group was accomplished by compiling three UK government datasets[1-4] into one database of Greater London roads. The data was collected over the years 2005 to 2018. In order to define urban-cycleways in the Greater London area, we utilized a sample clustering algorithm to define road categories. The urban-cycleway category is the group with above average cycle and bus traffic. In the following analysis we use data from the 280 identified urban-cycleways and separate shared and unshared routes into subgroups.

Our main result for the urban-cycleways analysis is shown in Figure 1. Here we calculate the average normalized accident totals over the thirteen year duration of the dataset for cycleways on the basis of their bus traffic. 86% of shared routes have under 3000 buses/day, and up to this traffic level there is no significant difference in accident outcome between shared and unshared lanes. There are no unshared lanes with higher bus traffic volumes, so any possible difference in safety margin in the highest bus traffic areas is unknown. However, accidents on shared routes above 3000 buses/day comprise only 13% of shared route accidents.

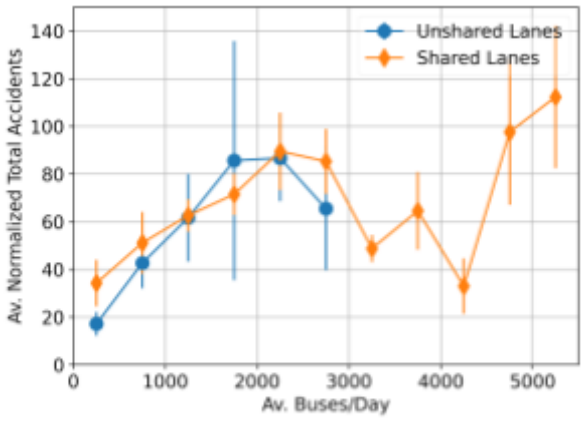


Figure 1: Safety comparison of route types.

Comparison of shared and unshared cycling and bus routes on London's urban roadways have been shown to have insignificant differences in safety as measured by cycle accident totals. This analysis showcases the usefulness of our group's comprehensive dataframe built for answering such questions relating to cycling safety. Many other studies could be carried out with this dataset, for example a predictive model for classifying accident severity could be developed. Such a model would highlight features important to reducing serious injury on London's roadways. Finally, the utility of our database was made possible by the detailed surveying carried out by the UK government. In that sense, studies carried out with our database for Greater London could be useful in convincing other urban bodies and governments to improve their reporting and surveying.

1. Estimated Average Annual Daily Flows, https://roadtraffic.dft.gov.uk;
2. CYCLANDS, https://zenodo.org/record/5603036#.Y44DuuzMlWo;
3. Road Safety Data, https://www.data.gov.uk/dataset/cb7ae6f0-4be6-4935-9277-47e5ce24a11f/road-safety-data;
4. Cycling Infrastructure Database, https://data.london.gov.uk/dataset/cycling-infrastructure-database