



## ***The Effect of Cycle Lanes on Cyclists' Road Space***

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### **Introduction**

Cycle Friendly Infrastructure [1] recommends that cycle lanes should be 2m wide wherever possible. This is the amount of space a cyclist needs on the road. Given the pressure on road space, cycle lanes are rarely this wide and there are a growing number of sub-standard cycle lanes appearing on the roads.

Advocates of cycle lanes argue that a poor quality cycle lane is better than nothing, claiming that the existence of the cycle lane alerts motorists to the presence of cyclists. Experienced cyclists tend to oppose sub-standard facilities and find that other vehicles pass closer and at greater speed as drivers tend to follow the lane markings rather than judge the amount of space a cyclist needs.

TRL Report TRL549 [2] used virtual reality simulations to test the effect on driver attitudes and behaviour of changes to the road infrastructure and of different behaviours on the part of cyclists. They found that drivers would overtake cyclists more carefully and slowly in simulations without cycle lanes marked. They recommended *"Arguably the effect of providing facilities that increase drivers' confidence but are unsuitable for cyclists to actually use may increase cyclists' exposure to risk. This implies that those responsible for the provision of cycle infrastructure should ensure that the recommended standards"*.

Harkey and Stewart [3] studied cycle facilities in Florida, they found that motor vehicles moved about 0.4 m further out when passing a bicyclist where no cycle lanes were marked, compared to overtaking a cyclist riding in a cycle lane.

This report investigates these contrasting views by making observations of motor vehicles overtaking a cyclist in real-world situations both with and without cycle lanes.

### **Location**

To observe the effect of cycle lanes on driver behaviour, I chose to look at a stretch of the A49 in Appleton, Warrington (GR SJ 616848). This is a wide busy single-carriageway road leading south from central Warrington to the M56. Cycle lanes, 1.5m wide, have been installed between Lyons Lane and Quarry Lane. South of here, there are no cycle lanes; the road continues at a similar width, but conventional road markings.

This site has the following advantages:

- The width of the cycle lane at 1.5m is typical – indeed so common that many actually believe this to be the standard.
- The conditions in terms of road-width and traffic volume are similar on both stretches with and without cycle lanes, enabling a controlled comparison to be made.

### **Method**

Two sites were chosen: A control site on an untreated stretch of road and a site with cycle lanes. Both sites were located away from junctions and on straight stretches of the road in order to be fully comparable.

A cyclist rode along each stretch several times, while I photographed the interactions between other vehicles and the cyclist. Afterwards the cyclist also gave subjective comments.

### **Results**

Three pairs of photographs are presented to show typical and comparable situations with and without cycle lanes. The photographs are scaled to the height of the cyclist to aid comparison.

The first pair of photographs (figure 1) each shows a single car overtaking the cyclist. As can be seen from figure 1a, without the cycle lane the driver moves well over to give the cyclist as much space as possible. With the cycle lane (figure 1b) the movement is less pronounced and the cyclist has less space.



*Figure 1. Cars overtaking the cyclist on  
(a) an untreated stretch of road and  
(b) on a stretch with cycle lanes*

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The second set of photographs shows the situation with larger vehicles. Without a cycle lane (figure 2a) the bus moves over to give the cyclist sufficient space, crossing the centre-line to overtake properly. When cycle lanes are marked (figure 2b) a second bus passes much closer to the cyclist.



*Figure 2. Buses overtaking the cyclist on  
(a) an untreated stretch of road and  
(b) on a stretch with cycle lanes*

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Figure 3 shows the cyclist being overtaken by lorries. Again, the same pattern can be seen. Without a cycle lane (figure 3a) the driver is taking great care to give the cyclist sufficient space, crossing the centre-line to overtake properly. When cycle lanes are marked (figure 3b) the lorry is taking much less care and maintaining its road position, channelled by the lane markings. The cyclist commented "Did you see how close that truck came?"



*Figure 3. Trucks overtaking the cyclist on  
(a) an untreated stretch of road and  
(b) on a stretch with cycle lanes*

### **Conclusion**

The effect of the cycle lane studied in this report is to reduce the amount of road-space available to cyclists, and therefore makes conditions significantly worse for cyclists. Superficially, this may seem counter-intuitive, but there are a number of possible explanations.

1. Drivers understandably tend to assume that the cycle lane represents an adequate amount of space for the cyclist, so position their vehicles according to the lane markings rather than relative to the position of the cyclist.
2. Drivers see less need to take special care when overtaking if the vehicle they are overtaking is in a separate lane.
3. The presence of the cycle lane on the opposite side of the road forces oncoming vehicles nearer to the centre line. This reduces the space available for overtaking vehicles to move to the right.

### **Recommendations**

Sub-standard cycle lanes should not be installed.

All existing cycle lanes should be reviewed and either widened to the 2m recommended Cycle Friendly Infrastructure or removed.

Further studies should be undertaken to discover how wide cycle lanes need to be in order to be of any benefit to cyclists.

### **References**

1. Bicycle Association, Cyclists' Touring Club, Department of Transport, and the Institution of Highways and Transportation (1996) *Cycle-friendly infrastructure: Guidelines for planning and design*, CTC.
2. Basford L, Reid S, Lester T, J Thomson J & Tolmie A (2002) *Drivers' perceptions of cyclists*, TRL Report TRL549, TRL Limited.
3. Harkey DL & Stewart JR (1997) "Evaluation of Shared-Use Facilities for Bicycles and Motor Vehicles," *Transportation Research Record* 1578 , pp. 111-118.



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