Floating Bus Stops on Leith Walk: an Interpretation of Evidence

This paper presents my interpretation of some of the implications of these studies. Although these represent my personal views, I declare an interest as current Convenor of Living Streets Edinburgh Group. A shorter version appeared in Local Transport Today, Issue 810 (October 2020).

Introduction

‘’Floating bus stops’ (or bus stop ‘bypasses’) were first introduced in Edinburgh on Leith Walk in 2016. In this arrangement, bus passengers have to cross a cycle path in order to board onto, or alight from, a bus. The aim was to enhance safety for cyclists, by avoiding the need for potentially dangerous overtaking manoeuvres at bus stops.

Concerns about the concept were expressed by walking and disability groups (Living Streets Edinburgh, RNIB and Guide Dogs for the Blind) locally and in other parts of the UK. These concerns largely centre around a potential transfer of risk from cyclists to pedestrians and bus passengers, especially those who are less mobile, unsteady on their feet or who have a visual or hearing impairment. In response to these concerns, the City of Edinburgh Council commissioned a monitoring and evaluation exercise in 2017 which consisted of two studies based on analysis of video recording:

- a statistical analysis by AECOM of 6 four-hour, peak-time samples (24 hours in total) over three periods (November 2017, May 2018 and November 2018);

- a more qualitative analysis by Edinburgh Napier University’s Transport Research Institute of footage from a single, northbound (downhill) bus stop over five weekdays in November 2017 for approximately 12 hours per day (60 hours in total).

The findings of the studies were shared with stakeholders in 2019 and 2020. It is understood that they will be published in due course by the City of Edinburgh Council.

Cycle/Pedestrian ‘interactions’ (potential conflicts)

The TRI study identified 103 ‘interactions’ during 60 hours, an interaction essentially being a potential conflict. They were classified according to severity: 76 ‘precautionary’, 24 ‘controlled actions’ and 3 ‘near misses’. No ‘very near misses' or ‘collisions’ were recorded. This represents 1.7 ‘interactions’ per hour, very similar to the AECOM findings.

According to the AECOM study, over time the number of interactions increased from approximately 1.6 per hour in November 2017 to 5.6 per hour in May 2018. (In November 2018, there were 4 interactions per hour; however, pavement narrowing at this time makes comparison difficult). This is in contrast to a possible expectation that interactions would reduce over time, as street users became familiar with the design.

Interactions were most frequent in May 2018 (134), which was also when most cyclists were using the cycle way; it appears that there are likely to be more potential conflicts when the cycle ways are at their busiest and fewer at quieter times (including weekends).

It was also observed that there were more interactions between pedestrians and cyclists when both were facing the same way; when facing each other, people may see the potential risk of conflict sooner and take earlier action to avoid that risk.

AECOM found that between 3% and 5% of cyclists left the cycle way and went onto the footway. This was especially common when pavements were overcrowded, and when large groups of passengers alighted from a bus. Pedestrians were much more likely to walk in the cycleway - initially nearly 60% (northbound) and 40% (southbound). It is not clear why more pedestrians were observed in the cycleway on the northbound (downhill) stops than on the southbound (uphill) stop.

Over time, there was little change in the percentage of cyclists leaving the cycle way for the footway but the number of pedestrians straying into the cycle way declined significantly - for example on the southbound bus stop, from 39% in November 2017 to 22% a year later. This perhaps indicates that pedestrians were becoming more familiar with the layout.

Initially, cyclists were likely to give way to pedestrians. However, over time, this changed. For November 2017, May 2018 and November 2018, the percentage of cyclists giving way to pedestrians fell from 69% to 48% and 31% respectively. As most of these interactions were a result of pedestrians entering the cycle way, it could be said that this shows the design working better.

The studies found that a large proportion of cyclists continued to use the carriageway rather than the cycle way, even at the bus stop. The percentages using the northbound (downhill) carriageway in preference to the cycle way varied between 46% to 69%. A lower percentage of cyclists (33% to 20%) used the carriageway southbound (uphill) in preference to the cycle way. AECOM attribute the difference to the speed differential with motorised traffic being greater uphill, causing a less comfortable/safe experience for cyclists.

Methodological issues

While these studies provide some valuable insights, they did not try to establish whether interactions were more likely between certain groups of pedestrians (such as older people) or indeed cyclists. Neither did they attempt to understand how people felt about them.

In particular, neither study attempted to understand the impacts of the design on different demographic groups, especially older people or disabled people. A major concern (as noted above) about the floating design concept is the effect on disabled people, especially but not solely, visually impaired people. This is not only a question of whether people felt safe, but also whether some people may actually avoid bus stops where they feel at risk. It has been claimed that blind people avoid areas where there are ‘shared spaces’.

It would also be useful to understand more about why cyclists chose to use (or avoid) the cycle way and the carriageway, again noting the difference in use between uphill and downhill stops.

Conclusions

While the great majority of pedestrians and cyclists experienced no conflict with each other, potential conflicts (including potentially distressing/dangerous ones) are not infrequent - with perhaps somewhere between 1 and 6 interactions per hour at peak times. AECOM calculates that fewer than 2% of pedestrians were involved in an interaction at the northbound bus stop, but TRI's figures imply that, over a year, there could be over 5,000 'controlled actions' and some 150 near misses - at a single bus stop. This implies a significant likelihood that there could be a number of actual collisions each year.

Interactions become more frequent over time - in contrast to a possible expectation that, as both cyclists and pedestrians became more familiar with the design, the number of interactions might reduce. The key factor appeared to be the number of cyclists - more cyclists meant a higher likelihood of interactions. It also seems that over time pedestrians increasingly give way to cyclists. This could suggest that giving pedestrians clear priority at bus stops (an aim expressed for example by Edinburgh councillors) will be difficult to achieve.

There are some design issues raised by the studies: 'interactions' were more common where there was a) little space on the footway and/or b) there was insufficient space on the island as people disembark from buses. This suggests that sufficient space must be available for the design to work best and that sites where space is more constrained may be less suitable for the design. Level surfaces may encourage cyclists (and pedestrians?) to stray into each other's areas, and kerbs on the cycle way may counter this. Kerbs will aid blind people to detect them - but could also represent a trip hazard for some people.

The cycle way at floating bus stops seem to be less used by cyclists heading downhill, who often prefer to continue using the carriageway. Because of the higher typical cyclist speeds, these downhill locations may also be those where cyclists pose a greater risk to pedestrians. Therefore, floating bus stops may be more appropriate to site where gradients are uphill rather than downhill.

Further longitudinal studies would be valuable to identify changes in behaviour by pedestrians, bus passengers and cyclists. It would also be important to understand better the perceptions of disabled and older people, to see whether or not they perceive a higher risk, and especially to understand if people perceiving a risk tend to avoid using floating bus stops.

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