

# **Governing Urban Transformation**

**Understanding what works - evaluating the student experience of cycling infrastructure along a specific section of the Corridor Super Cycle Way**

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**Author declaration:**

**I,8930192, confirm that this report is based on my own work and that I am happy with both my own and my partner's,9028090, contribution to the final submitted version.**

## Contents

<b>1. Executive Summary</b>	<b>4</b>
<b>2. Introduction to Manchester's Cycling City</b>	<b>5</b>
<b>3. Methodology</b>	<b>8</b>
<b>4. Evaluating the Corridor Super Cycle Way</b>	<b>9</b>
<b>4.1 Safety</b>	<b>10</b>
<b>4.2 Road Hierarchy</b>	<b>12</b>
<b>4.3 Possible solutions for Manchester City Council</b>	<b>13</b>
<b>4.4 Cost</b>	<b>16</b>
<b>5. Conclusion</b>	<b>19</b>
<b>6. References</b>	<b>20</b>

## List of Figures

<b>Fig. 1: Graphs displaying cost-benefit of cycling, Copenhagen</b>	<b>5/6</b>
<b>Fig. 2: Survey responses about cycling specifically</b>	<b>10</b>
<b>Fig. 3: Cycling fatality rates in Netherlands, Denmark, Germany and UK</b>	<b>11</b>
<b>Fig. 4: Table displaying public ratings of cycling infrastructure on Wilmslow Road</b>	<b>13</b>
<b>Fig. 5: Survey responses on improvements to the cycleway</b>	<b>14</b>
<b>Table 1: Comparison between key cycling policies and innovative measures used in European cities and Manchester</b>	<b>15</b>
<b>Fig. 6: Survey responses on reasons for cycling</b>	<b>17</b>

*The installation of Dutch style cycling infrastructure along the Oxford Road and Wilmslow Road is the city's highest profile cycling investment. The scheme aimed to encourage people who did not already cycle to take it up. This challenge involves finding out whether the scheme has been successful so far. It may focus on some or all of the following issues: differences among demographic groups or types of cyclist, evaluation of specific areas or infrastructural elements of the scheme.*

## **1.Executive Summary**

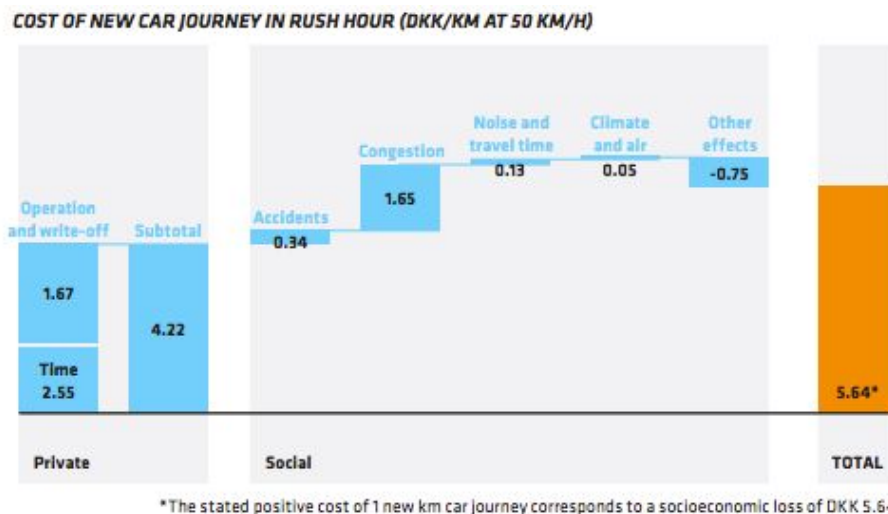
In 2013, Manchester was allocated a £20 million cycling investment by the central government. Cycling plays a salient role in Manchester's goal to become a low-carbon city. The development of cycling infrastructure across the city offers an alternative, zero-carbon mode of transport.

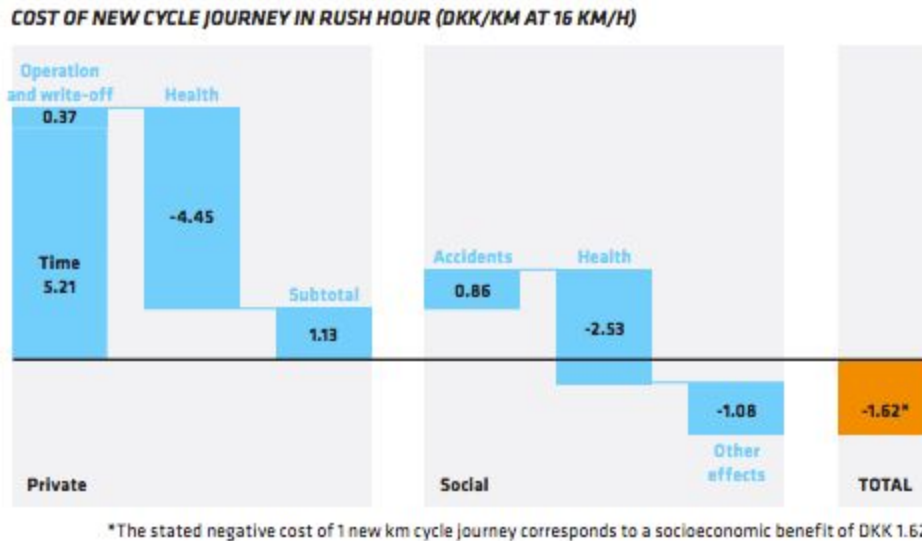
This research project critically evaluates the success of Manchester City Council's Velocity 2025 scheme in encouraging university students to cycle. It focuses specifically on a section of the Corridor Super Cycle Way between Fallowfield and University. The data collection takes a qualitative methodological format in the form of questionnaires investigating students' experiences of the cycleway. This report analyses the extent to which the cycleway has encouraged students to cycle, and what can be improved to make the scheme more successful. By focusing on the barriers to cycling illustrated by user experiences, we then suggest ways in which Manchester City Council can improve and encourage more students to take up cycling in the bid for a sustainable, healthier city.

## 2. Introduction to Manchester's cycling city

Across the globe, cycling is rapidly being integrated into innovative urban design to create more sustainable, liveable cities (Montgomery, 2013). In 2013, the 'Velocity 2025' cycling strategy was unveiled for Greater Manchester. This project is a collaboration between Transport for Greater Manchester (TfGM) and the Greater Manchester Combined Authority (GMCA), backed by a grant of £20 million from the central government (TfGM, 2017). The scheme is predominantly based on the successful Dutch-style cycle lanes which are segregated from the road for cyclists' safety (Martens, 2007). This report has been commissioned by Manchester City Council to evaluate the success of the scheme so far, and identify possible improvements to further encourage cycling in Manchester. This research encompasses the section of cycling infrastructure between Fallowfield and the universities, along Oxford and Wilmslow Road.

Demonstrated by its nationwide £148 million investment, cycling is clearly recognised as an advantageous financial investment from a national to local scale (Department for Transport, 2013). The Velocity 2025 strategy was borne out of Manchester's desire to make cycling 'a signature of [the] future city brand' (TfGM, 2013:4). This is due to the potential for cycling to mitigate health problems, support low-carbon targets and contribute to economic growth. The implementation of cycling infrastructure in Manchester could save health costs of up to £7.3 million per year (TfGM, 2013). A study in Copenhagen highlights that cycling, in comparison to car journeys, actually has a socioeconomic benefit because of the reduced externalities such as congestion and accidents (see Fig. 1).





(Fig. 1: Graphs displaying the cost-benefit of cycling compared to driving in Copenhagen. Source: Copenhagen City of Cyclists, 2015)

In this way, investment in cycling has the capacity to instigate social, environmental and economic benefits without massive structural transformation. The devolution of power from Whitehall to Manchester grants the city a mandate to implement these policies. The successes of this city can be observed and emulated across the UK and further afield, building networks of collaboration and smart governance.

Urban design is particularly important in changing people's mentality towards cycling (Montgomery, 2013). If cycling infrastructure is efficient, accessible and well-integrated into the city's transport networks and urban fabric, citizens will be far more inclined to use it. However, local governance must play a fundamental role in instigating these changes by producing cohesive policies and infrastructure, moving towards collective action (Coaffee and Healey, 2003).

The Corridor Super Cycle Way is one of the first new cycle lanes to be developed by Manchester City Council. This distinguishes it as valid focal point for our research. This study focuses on university students, who form a large proportion of road users along this route. These parameters narrow down the scope of the study, thus providing more accurate information regarding barriers to cycling. With

over 70000 students making up 14.9% of Manchester's total populace, Manchester is home to the largest student population in Europe (Manchester Fact sheet, AO1, 2016). Travel is a significant factor for this demographic. Therefore, changes in student commuting choices can have a dramatic effect on overall use of transport. This highlights their importance in policy-making for the Council regarding transport infrastructure and environmental targets.

It is clear that Manchester is dedicated to transforming itself into a cycling city in order to improve its economic, social and environmental performance. To maximise the effectiveness of this scheme, continuous evaluation is fundamental to highlight weaknesses in the infrastructure that may deter users. By using a qualitative methodological format in the form of questionnaires, subjective and personal accounts of the user experiences of the cycleway can be analysed.



### **3. Methodology**

This research project takes a predominantly qualitative methodological format. Data has been collected in the form of online questionnaires targeting university students in Manchester. These consisted of 12 questions relating to the student user experience of the cycleway between Fallowfield and University. The sample included 50 responses from cyclists and non-cyclists.

This method was appropriate for this research as it enabled participants to give yes or no answers to a number of questions that made clear whether or not the scheme had been successful in encouraging them to cycle. It also generated more in-depth answers to a number of questions, providing insight into students' personal opinions about the successes and failures of the scheme. This allowed for a clearer and deeper analysis of the student user experience elicited by the cycleway, and useful information for how this can be improved.

Data was analysed by identifying keywords and phrases in the survey responses which related to broader themes. Although the sample was fairly small, this demographic has not been previously studied for cycling research by the Council. To further this research, this sample size could be expanded to improve the validity of this data collection.

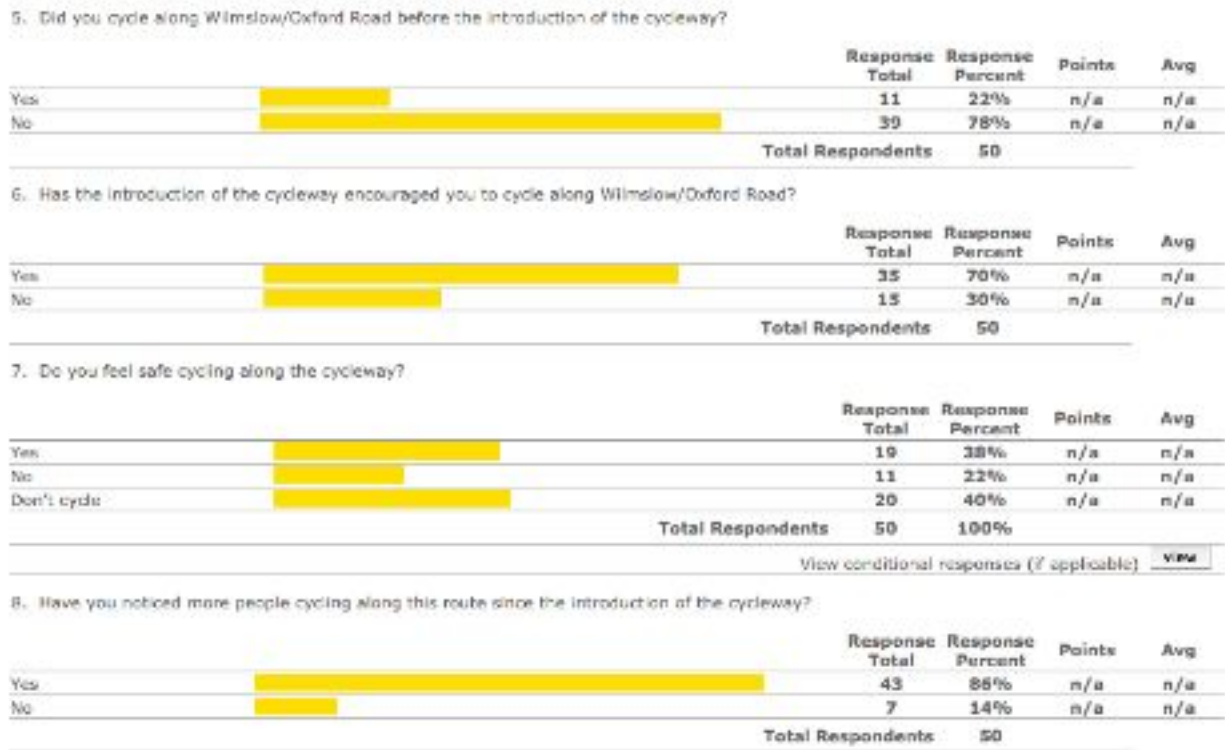
Secondary data was also utilised, predominantly in the form of policy documents from Manchester City Council, as well as bicycle schemes from other cities such as Copenhagen. This helped to embed our research into a wider governance context.

#### **4. Evaluating the corridor super cycleway**

The questionnaire analysis revealed a number of key findings about the student user experience of the cycleway between Fallowfield and the universities. There was a fairly even split between cyclists and non-cyclists, with 28 cyclists and 22 non-cyclists participating in the survey. This reduced bias and highlighted several positives and negatives of the scheme at present. From this, suggestions have been made to Manchester City Council to improve the success of the cycleway in encouraging students to cycle.

#### **To what extent has the Corridor Super Cycle Way scheme been successful in encouraging university students to cycle?**

Only 11 respondents cycled along Wilmslow/Oxford Road before the introduction of the cycleway. 70% of the respondents asserted that the new cycling infrastructure has encouraged them to cycle. Moreover, 86% of respondents stated that they have noticed more people cycling along this route since its introduction (see Fig. 2). In this way, the development of the Corridor Super Cycle Way appears to have been relatively successful in encouraging students to cycle who didn't before. This demonstrates that one of the main aims of the scheme is being achieved to an extent.



(Fig. 2: Survey responses presented in graph form. Author's own.)

However, this disguises a more nuanced evaluation of the student user experience of the Corridor Super Cycle Way. Although the responses elicited a relatively positive affirmation of the cycle lanes by cyclists, they also repeatedly raised a number of barriers to cycling experienced by many non-cyclists. In addition to this, the student cyclists outlined a number of issues with the cycling infrastructure that reduced their perception of safety and comfort. These disincentives were centred predominantly around safety, road hierarchy and cost. These and must be addressed if the Velocity 2025 strategy is to be successful in encouraging more people to cycle in the city.

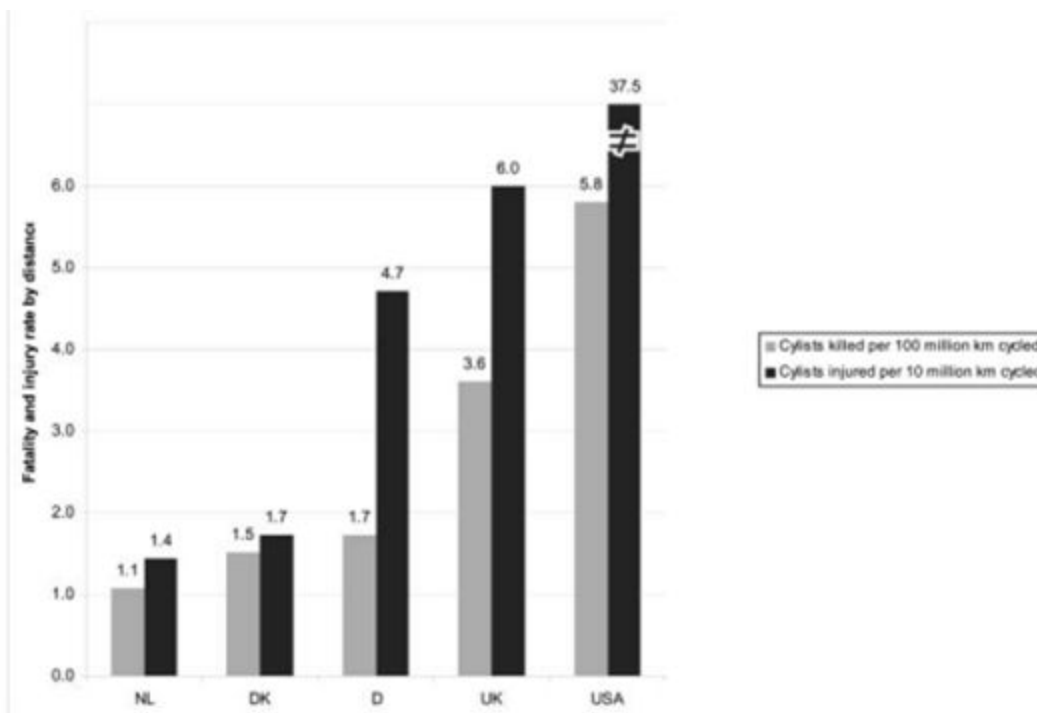
#### 4.1 Safety

Of the 50 respondents, 31 claimed that they did not feel safe when cycling along the cycleway (see Fig. 2). Though 20 were non-cyclists, 15 of these state that they do not cycle because they perceive it to be dangerous. Many base their concerns on accidents that they have seen or heard about.

*'Primarily for safety reasons, I wouldn't feel safe cycling in Manchester after hearing about all the accidents that have happened.'*

*'It's too dangerous, cars don't look for cyclists, I have seen too many accidents and I wouldn't feel comfortable or confident on the roads.'*

In 2012, the Curry Mile along Wilmslow Road was identified as the most dangerous spot for cycling accidents in Manchester (Cycle Injury, 2012). Internationally, the UK is significantly more dangerous for cycling compared to other European countries such as Denmark, Germany and the Netherlands, which have taken a more holistic approach to embedding cycling into the urban fabric of their cities. This is demonstrated in Fig. 3, which displays the number of cycling fatalities and injuries in the UK compared to these countries. Although the cycle lanes may have improved safety levels, the perception of danger along this route is still very prevalent for students. To truly make the scheme successful, the Council must supplement this infrastructure with other programmes that promote safe cycling in Manchester.



Sources: Danish Ministry of Transport (2007); Department for Transport (2007); German Federal Ministry of Transport (2007); Netherlands Ministry of Transport (2007); U.S. Department of Transportation (2007)

(Figure 3: 2005-2006 Fatality rates and non-fatal rates in the Netherlands, Denmark, Germany and the UK, and the USA. (Pucher and Buehler, 2008:506))

## **4.2. Road hierarchy**

Another key issue is road hierarchy, where some road users (eg. cars, buses, pedestrians) are given priority over cyclists due to normative social and infrastructural practices. Oxford Road is one of the busiest bus routes in Europe with 100 buses passing through every hour (BBC News, 2014). Vehicles have traditionally been prioritised over pedestrians and cyclists through wide roads and narrow pavements. The introduction of Dutch-style cycle lanes has further squeezed space for non-vehicle users, causing more clashes between pedestrians and cyclists who now compete for this fringe space. Only one student cited the volume of buses as a deterrent to cycling, whilst most concerns referred to cars and pedestrians.

26 respondents indicated a lack of sufficient separation between cyclists and pedestrians along the cycleway, often causing hindrance and sometimes collisions. While the road continues to prioritise vehicles, leading to an uneven proportion of space divided between vehicle and non-vehicle users, there will not be enough space to safely accommodate a rising number of cyclists along this route.

This issue was highlighted in the Wilmslow Road Cycleway Monitoring report (Manchester City Council, 2016). Fig. 4 (see below) displays that features regarding shared use pavements and crossings had some of the lowest user satisfaction scores out of all of the new cycling infrastructure developments. This illustrates that the concerns raised by students complement those emphasised by wider demographic users of the cycle lanes.

**Q11 - Thinking about the new highway arrangement on Wilmslow Road, how would you rate the following features? (Mode = Bike)**

<b>Q11 - Thinking about the new highway arrangement on Wilmslow Road, how would you rate the following features?</b>	<b>Excellent</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	<b>Very poor</b>	<b>Don't know</b>	<b>No response</b>
Early green lights for cyclists	56%	29%	5%	2%	1%	5%	1%
Kerb segregated cycle lanes	45%	37%	7%	6%	4%	2%	-
Cycle lanes around bus stops	36%	30%	14%	10%	5%	4%	-
Advanced stop boxes for cyclists	35%	37%	13%	2%	2%	9%	2%
Lower speed limits	34%	35%	16%	2%	1%	10%	2%
Painted cycle lanes	29%	37%	22%	6%	2%	1%	3%
Cycle lanes behind parking bays	27%	35%	16%	6%	4%	8%	4%
Shared ped/cycle crossings	13%	31%	31%	7%	5%	8%	5%
Narrower road	13%	24%	26%	14%	7%	13%	2%
Shared use pavements	8%	18%	27%	25%	14%	5%	2%
Parking	5%	16%	24%	12%	5%	35%	2%

(Fig. 4: Table displaying public ratings of cycling infrastructure along Wilmslow Road. Source: Manchester City Council, 2016).

### ***4.3 Possible solutions for Manchester City Council***

The survey responses revealed several physical changes that could be implemented to improve the cycleway infrastructure for its users, many of which are outlined in Fig. 5 (below). These include: widening the cycle lanes; creating one consistent cycleway to create distinct separation; repairing potholes and areas prone to puddling; night lighting and clearer signage. More consultation between the Council, cycling groups and urban planners can lead to improved efficiency in cycling governance and infrastructure development.

**9. Do you think anything could be improved about the cycleway? If so, what? Please give detail.**

**Full  
Response**

1.	<p>Lots, the design of the cycle way is incredibly fractured and there is a clear divide between the quality of the cycle way along Curry Mile and outside the universities. I know that this is due to multiple companies designing sections of the route and this has had a negative impact on the fluidity of the route as a whole. On Curry Mile, cyclists are forced to weave in and out of the cycle route making it a longer and less efficient route for cyclists. Additionally the surfaces are poorly made and this allows for large puddles to build up which can be very dangerous (and wet). There is also a huge conflict between cyclists and motorists on the Curry Mile as the cyclists are forced to weave and many drivers cut off cyclists as they turn corners sharply which is extremely dangerous (I have been hit twice this way). Finally the relationship between pedestrians and cyclists is not great with pedestrians feeling it is their right of way to walk along the cycle lanes (perhaps there is a lack of awareness/ education about cycle lanes).</p>	<a href="#">view</a>
2.	<p>Education given to people who live on/around Curry Mile as people are always walking in the cycle way - perhaps barriers along it to stop them from walking in it. It is quite dangerous and I have crashed into people a few times.</p>	<a href="#">view</a>
3.	<p>There are some locations where the cycle path is on the pavement. This is confusing for both pedestrians and cyclists, so could be improved with a clearer separation. Also making it more visible for cars along the Curry Mile, where cyclists are often cut off by cars turning onto/off the main road. Maybe if the cycleway was wider, too, it would be easier and safer to overtake other cyclists causing less of a build up of cyclists of all different speeds.</p>	<a href="#">view</a>
4.	<p>Making more of a distinction between the pavement and the cycle lane as lots of people walk down it. Maybe paint it red rather than green seems a more inviting colour?</p>	<a href="#">view</a>
5.	<p>Maybe have some sort of low barrier or sections of fencing to indicate that it is separate from the pavement.</p>	<a href="#">view</a>
6.	<p>Improve pedestrian awareness</p>	<a href="#">view</a>
7.	<p>Better educate the pedestrians of the dangers of the cycle path i.e. not looking when crossing / walking on it</p>	<a href="#">view</a>
8.	<p>Continuous infrastructure</p>	<a href="#">view</a>
9.	<p>Pedestrians not walking in them</p>	<a href="#">view</a>
10.	<p>It could be much better in the Curry Mile if they had taken space away from the parking bays as opposed to taking space away from the pavement.</p> <ol style="list-style-type: none"> <li>1. they're too narrow. take a look at the cycle ways in Copenhagen for example; you can fit multiple cyclists to allow for safe overtaking and by marking out a wider space as a cycle lane it makes it so much clearer that pedestrians and drivers aren't the only road users.</li> <li>2. ensure that there is cyclist priority at EVERY set of lights by a good few seconds to allow for cyclists to gain priority.</li> <li>3. The Curry Mile is a mess for cyclists. By putting the narrow lanes next to narrow pavements, it puts pedestrians constantly in the way of those on bikes. I'd argue this is more dangerous as drivers are expected to be watching out for cyclists (in practice this is another story...) whereas every day I see pedestrians completely oblivious that standing in a cycleway or crossing without looking (often absorbed in a mobile phone) is a hazard. Further, by putting the cycle lanes behind a continual row of parking spaces, it puts cyclists</li> </ol>	<a href="#">view</a>

(Fig.5: Survey responses highlighting what could be improved about the cycleway. Author's own.)

Manchester could also take inspiration from other cycling cities. Table 1 (below) highlights policy measures implemented in some European cities compared to those currently instigated in Manchester. This forms a framework in which to analyse the success of the Corridor Super Cycle Way at surface level.



Policy and Innovative measures in Dutch, Danish and German cities	Suggestions for Manchester City Council
<b>1. Extensive systems of separate cycling facilities</b> <ul style="list-style-type: none"> <li>- Well maintained and integrated paths, lanes</li> <li>- Fully coordinated directional signs for cyclists</li> <li>- Off street short cuts</li> </ul>	<p>Manchester has started to develop cycle lanes along selected routes, but it is not fully integrated into the city's transport network. A number of routes remain unfinished creating a fragmented system.</p>
<b>2. Intersection modifications and priority traffic signals</b> <ul style="list-style-type: none"> <li>- Advanced green lights for cyclists at intersections</li> <li>- Cyclists shortcuts to make right hand turns before intersections</li> <li>- Brightly coloured bike paths and bollards</li> </ul>	<p>Along the super cycle a selection of traffic lights and junctions have been retrofitted with advanced green lights for cyclist, coloured paths and a few bollards however there is a lack of consistency along the curry mile causing confusion for both cyclists and other road users.</p>
<b>3. Traffic Calming</b> <ul style="list-style-type: none"> <li>- All residential neighbourhoods at 30kmh</li> <li>- Narrow roads where bikes have absolute priority over cars</li> </ul>	<p>Between the hours 6am and 9pm Manchester city council and Transport for Greater Manchester has implemented restricted traffic access for buses, taxis, cyclist and pedestrian only resulting in less congestion, but motorised vehicles, especially buses remain the dominant road user.</p>
<b>4. Bike Parking</b> <ul style="list-style-type: none"> <li>- Large supply of good bike parking across city</li> </ul>	<p>Manchester has introduced a small number of parking facilities, yet they are unsheltered and accessible by anyone. There is a small number of private bike storage areas provided by the university, however the facilities do not hold the capacity to meet the demand of storage required.</p>
<b>5. Coordination with public transport</b> <ul style="list-style-type: none"> <li>- Extensive bike parking at metro</li> <li>- Call a bike programme, bike's rented by cell phone at transit stops</li> </ul>	<p>Manchester lacks an interlinked transport system; privatised bus companies and the metro do not allow bicycle's on-board. Brompton bike hire is one of the only examples of bike hire schemes; there is significant room to replicate across this programmer across other areas of the city.</p>
<b>6. Traffic education and training</b> <ul style="list-style-type: none"> <li>- Cycling training courses</li> <li>- Stringent training of motorists to respect pedestrians and cyclists</li> </ul>	<p>In a number of strategies for improving Manchester's cycling infrastructure education is highlighted as a necessary prerequisite to develop cycling culture, however more extensive and interlinked schemes are required to involve a wider proportion of the population, outside of the central areas.</p>
<b>7. Traffic Laws</b> <ul style="list-style-type: none"> <li>- Legal protection for children + elderly</li> <li>- Motorists assumed by law to be responsible for almost all crashes</li> <li>- Enforcements of cyclists rights</li> </ul>	<p>Road hierarchy remains an issue in Manchester, the super cycle section of Oxford road is restricted to cars but the number of buses has not been limited, as a result motorised vehicles still dominate this section and zero-carbon modes of transport are given significantly less power on the roads.</p>

(Table 1. Comparison between key cycling policies and innovative measures used in European cities and Manchester. Source: Author's own and adapted from Pucher and Buehler, 2008.)



Table 1 indicates several ways to improve Manchester's cycle lanes. It displays that infrastructural change must be embedded within deeper societal shifts, instigated through co-partnership between a number of key stakeholders within the city (Geels, 2012). This form of tendering encourages a long-term governance strategy towards cycling development. Looking beyond sole infrastructure development towards cross-sector collaboration is of top priority for further cohesion between the Council and the university. Additionally, the University of Manchester is home to Manchester's cycling lab, which focuses intently on behavioural change to see what facilitates success in a cycling city (Manchester Cycling Lab, 2017). As an expert research network and essential actor within the city-region, the university should be utilised by the Council to facilitate a complementary programme for Manchester's cycling transition.

#### **4.4. Cost**

Another issue raised was the cost of buying and maintaining a bicycle. 13 respondents stated that they do not cycle because they do not have access to a bike. When asked if any other schemes had encouraged them to cycle in Manchester, 40 respondents said no. This clearly displays that there are insufficient social elements in place to incentivise student cycling. Council schemes are not being advertised to students. Changes in urban design can have a significant impact on citizens' decision-making, but combining it with social incentives will further improve its success at nudging students towards more sustainable choices (Montgomery, 2013).

Nine respondents suggested cost-reduction incentives would encourage more students to start cycling. These included free or discounted bikes, safety equipment (locks, helmets etc), and bike hire schemes such as those seen in London or Paris. The Vélib bicycle hire programme in Paris is the most ambitious of all similar schemes throughout the western world (Montgomery, 2013). Subscriptions cost €1 per day, or €29 a year- a tiny fraction of an annual 'unirider' bus pass in Manchester, costing £220 (Stagecoach, 2017). Four respondents stated that increased bus fares would encourage them to cycle. However, if a similar bike hire programme was implemented in Manchester, this huge price reduction would certainly incentivise more students to cycle. Docking stations in Fallowfield and at the university could easily facilitate this.

Free or discounted safety equipment available to students would also increase safety, thus mitigating the perception of danger as a barrier to cycling. The university already run a discounted bike-lock scheme, yet this is currently not endorsed by the Council (UoM, 2017). Collaboration between the Council and universities is necessary to successfully develop and promote these schemes to students.

		Full Response
4.	<b>Why do/why don't you cycle? Please give detail, and feel free to give multiple reasons.</b>	
1.	I cycle because it's more convenient than getting the bus especially with all the diversions	<a href="#">view</a>
2.	1) Cheaper than a bus pass 2) Good for fitness 3) Quicker than the bus most of the time	<a href="#">view</a>
3.	It's quicker than the buses, and it's a lot more pleasant. Being in the fresh air rather than on a stuffy bus is a much better way of waking up your brain in the morning on the way to uni, and feeling refreshed on the way home. That said, if the weather is terrible I usually take the bus instead. Do: Cheaper than bus, good exercise, faster than bus	<a href="#">view</a>
4.	Don't: If I'm tired or feeling lazy, if weather is bad, if I have a lot to carry	<a href="#">view</a>
5.	Faster than the bus, cheaper than the bus, good exercise, fun, freedom of travel	<a href="#">view</a>
6.	Keep fit / more convenient / cheaper in the long run	<a href="#">view</a>
7.	It's too dangerous, cars don't look for cyclists, I have seen too many accidents and I wouldn't feel comfortable or confident on the roads	<a href="#">view</a>
8.	Cheaper and refreshing	<a href="#">view</a>
9.	Worried about getting into an accident or being hit by a car especially at junctions. Can't afford the cost of a bike knowing I would only cycle on sunny days, and also the fact that I like getting the bus with my friends sometimes.	<a href="#">view</a>
10.	It's cost-free (i.e. don't have to pay for public transport); health benefit; ecological benefit; it's quicker than public transport due to the traffic congestion in the city; I enjoy cycling regardless	<a href="#">view</a>
11.	predominantly environmental reasons and picked it up after the cycle lanes were introduced	<a href="#">view</a>
12.	- cheaper than the bus/no bus pass - quicker (10 min cycle/20 min bus) - better for the environment - fresh air/break from work!	<a href="#">view</a>
13.	I do not feel safe cycling because of the constant buses running on the road from fallow field to uni	<a href="#">view</a>
14.	Save money on a bus pass, exercise, nice to be outside after spending all day in the library	<a href="#">view</a>

(Fig.6: Survey responses, many of which connote cycling as a cheap alternative to the bus. Author's own.)

Challenging this, 17 respondents indicated cheap travel as an incentive for cycling, asserting that purchasing a bike is already cheaper than a bus pass (see Fig.6). This emphasises the economic benefit of cycling, but suggests that stronger promotion is necessary to convey this to non-cyclists. For those who have purchased or want to purchase their own bike, the development of legitimate bike trading and maintenance schemes were also suggested as possible cycling incentives. In Copenhagen, bike repair programmes such as Cykelven have been a popular contribution to their sociotechnical approach to cycling (Copenhagen City of Cyclists, 2015). The Council should work closely with local cycling organisations and charities to deliver similar services to students. Improved links with the

university would also acknowledge students as important actors within the wider city region. This sociotechnical governance strategy would elevate the success of the Velocity 2025 scheme.

## 6. Conclusion

Our research shows that the introduction of the Corridor Super Cycle Way, as part of the Velocity 2025 scheme, has been relatively successful in encouraging students to cycle. Many students have cited the new cycling infrastructure as having influenced them to cycle when they didn't beforehand. The cycle lanes appear to have socioeconomic benefits for their users and for Manchester as a whole.

However, a number of infrastructural improvements to the cycleway have been suggested to mitigate persistent barriers to cycling. In addition to this, an increased emphasis on social schemes to supplement the physical infrastructure will further encourage students to cycle. Whilst physical infrastructure is important, so too are an individual's socioeconomic position. Therefore, 'soft' measures should be implemented to encourage more students to cycle alongside 'hard' infrastructural improvements such as upgraded road layout. These include incentives aimed specifically at students, such as bike hire schemes and discounted safety equipment. The success of Dutch, Danish and German cycling cities suggest Manchester must embrace further cross-sectoral collaborations by creating a framework that both encourages and creates co-benefits for all actors involved.

A co-ordinated, multi-faceted approach is necessary if Manchester is to meet the targets set out in Velocity 2025. The challenge of governance remains the biggest obstacle at present, with students forming a large proportion of Manchester's populace. They themselves are active participants in the city's research network and can therefore form an important partnership with the Council to meet these ambitious goals.

Although underway, Manchester remains in the preliminary stages of its cycling transition. As the city begins to reorient development towards more sustainable and resilient forms of transport, it would be beneficial for the Council to implement these suggestions for their future cycleway developments. To further this research, a consultation between the Council and the university could be undertaken to discuss the development of the schemes suggested in this project.

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