

# University of Worcester Bike Share: Woo Bikes



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**University of Worcester Bike Share: Woo Bikes**

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## **Abstract**

The Worcester City Council recently received a Local Government Association (LGA) grant to collaborate with the University of Worcester on a pilot scheme whereby Woo Bikes would place e-bikes with local employers for a trial period between January and June 2021. To assist in this endeavor, the team reviewed current and best practices in the implementation of bike share and employer bike pool schemes. We evaluated employer interest in the bike share pilot through a survey and assessed employee interest through a focus group. The team found that overcoming the institutional and behavioral barriers to cycling is difficult, but provided several recommendations about how best to appeal to businesses with this scheme.

## **Acknowledgments**

The team would like to thank the following individuals for their continued help and support throughout the entirety of the course of this project. Thank you to Katy Boom for her incredible support. Her excitement for the program and feedback on our work was always very appreciated. Thank you also to Heather Barrett for her continued help. The University of Worcester is lucky to have such passionate champions for sustainability.

We would also like to thank Ruth Corral from the Worcester City Council for taking the time out of her busy schedule to help the team as well. Her input and feedback was all very helpful to completing our project.

Our thanks also go out to Professor Golding. His continued support was always very reassuring. The countless hours of help and feedback he provided our team with was not lost on us, and we are very grateful for all of his help.

## **Executive Summary**

The City of Worcester has set an ambitious goal to achieve net zero carbon emissions by 2030. Promoting cycling is one aspect of the city's emissions reduction strategy. The University of Worcester began encouraging bicycling as part of its sustainable travel strategy for several years. The University began the Woo Bikes bicycle share scheme in 2012 to encourage students and staff to bike more and to reduce the university's overall carbon footprint. The University added electric bikes in 2019 to encourage greater participation, and the e-bikes have proven very popular. The City Council recently received a Local Government Association (LGA) grant to collaborate with the University of Worcester on a pilot scheme whereby Woo Bikes would place e-bikes with local employers for a trial period between January and June 2021. The trial is intended to give employers and employees the chance to experience the use of e-bikes for commuting and business travel.

### *Methods*

The goal of our team was to assist the University of Worcester and Worcester City Council in rolling out the pilot e-bike sharing scheme. This project had three main objectives:

- Review current and best practices in the promotion and management of bike share schemes, especially work-based schemes.
- Evaluate employer interest in the bike share pilot through a business survey and interviews
- Evaluate employee interest in and concerns about an employer bike share scheme.

The team engaged in several tasks to accomplish these objectives, including interviews, a survey, and focus groups. Due to the remote nature of this project our interviews were conducted using Online Surveys, Zoom, and Microsoft Teams.

## *Conclusions*

Cycling has grown in popularity in several cities in the UK, especially London, over the past 15 years as a response to improved cycling infrastructure and growing concerns about climate change, vehicle emissions, and urban congestion. The COVID-19 pandemic has encouraged more people to cycle and the government has reported a 200% increase in people cycling on many weekends in 2020. Whether this trend continues after the pandemic remains an open question.

It is evident that cycling culture is very prominent in major cities in England like London that have invested heavily in cycling infrastructure, but cycling culture is much less prominent in smaller cities like Worcester that have not invested as much in cycling infrastructure or cycling promotion programs. Many local authorities have engaged in a variety of efforts to encourage cycling, including cycling proficiency programs in schools, council bike pools, and the provision of infrastructure such as bike paths, bike racks, and even the creation of low traffic neighborhoods. Many businesses participate in the national Cycle2Work scheme and some try to incentivize employees to cycle by providing employee bike pools. Unfortunately, the lessons learned from many of these efforts is that changing public attitudes and behavior is extremely difficult. Overcoming the institutional and behavior barriers to cycling requires persistent and consistent multi-pronged efforts in education, outreach, and enhanced infrastructure.

The Worcester City Council has adopted an aggressive set of targets for GHG emissions reduction and will be enacting transportation policies to achieve these targets. Among these plans is the promotion of cycling. The City of Worcester actually has a reasonably extensive set of bicycle paths and is planning to enhance connectivity with the new Kefax bridge in St. John's. Unfortunately, Worcester is perceived by many to be unfriendly to cyclists and relatively few people cycle regularly within the city, citing traffic and safety as a major concern. The City Council has received a grant from the Local Government Association (LGA) to develop a pilot bike share scheme for employers in collaboration with the Woo Bikes program at the University of Worcester. The City and the University hope that providing a convenient workplace bikeshare scheme will encourage employees to commute and/or conduct local business travel by bicycle and this in turn will encourage others to take up cycling also.

Our survey of employers reveals both the promise and pitfalls of the proposed pilot scheme. The lack of response to our survey, despite the best efforts of the University and the City Council to encourage participation, highlights the problem of getting attention. On the other hand, the list of nine companies expressing an interest in the program provides a base of potential participants from which to build. Similarly, the survey revealed that employees have concerns about aspects of the program, such as liability, insurance, and maintenance. These reflect concerns raised by employers elsewhere with regard to bike pool schemes. On the positive side, however, these concerns may be moot since Woo Bikes will handle the issues of insurance and maintenance in the pilot scheme. Once this is explained to employers, they may be more apt to participate in the pilot scheme.

The focus group gave us insight into what employees thought about a bike share scheme at their business and biking to work in general, although we were able to only conduct one session with four participants. Participants indicated that their commute might be more difficult if they have to deal with dropping off and picking up their kids at daycare before and after work. A few other participants said that their biggest challenge would be in their ability to get ready properly for work, as they believe they might not have the facilities or time to change at their business before they start their day. Participants indicated that biking to work would have environmental and health benefits, but they were concerned about safety and time management. The participants also pointed out that the lack of enthusiasm for cycling and cyclists in general poses a big barrier to biking in Worcester. However, the participants did agree that Worcester has the structure and potential to be generally cycle-friendly. They felt that the overall culture needs to change for the implementation of a bike share like Woo Bikes to work best.

Ms. Boom and Ms. Corral hope the pilot program will be successful and expand. While Ms. Boom emphasized that the University would continue to support the program on their campuses, her hope was that the program would be taken on by the city council and expanded into a city-wide scheme. Ms. Corral emphasized that the council will make future funding and expansion of the scheme contingent on the success of the pilot.

## *Recommendations*

Based on our findings, the team has several recommendations for both Woo Bikes and future project teams. We recommend that the University and the City follow up with the businesses that indicated in the survey they are interested in the scheme. We recommend also reaching out to local organizations such as the BID, Chamber of Commerce, and cycling advocacy groups to reach more employers. The University and the City should develop a set of marketing materials to explain the benefits of the Woo Bikes scheme. We also recommend that cycling champions are found throughout the community and businesses. Once a couple of businesses start to participate in the scheme, their experiences should be promoted and shared through several different ways including testimonials and social media.

We also recommend that Woo Bikes liaise with local organizations such as BID, Chamber of Commerce, and cycling advocacy groups to reach more employers. These organizations have networks of companies that they can communicate with to continue to introduce the scheme to employers and promote it. During our interview with Sam McCarthy, Projects and Marketing Manager at Worcester Business Improvement District (BID), indicated that they would be willing to help Woo Bikes conduct a formal survey with their network of 600 plus businesses (personal communication, May 4, 2021). The same survey instrument or a modified version might be used. The Chamber of Commerce is a member-fed, nonprofit that works to support businesses of the area. The city of Worcester is a part of the Herefordshire and Worcestershire Chamber of Commerce and has a network of 1400 businesses (British Chamber of Commerce, n.d). Cycling advocacy groups, like Bike Worcester, might be willing to solicit support from their members. Bike Worcester members might be willing to serve as advocates or ‘champions’ for the scheme within local businesses.

The team suggests that Woo Bikes develop marketing materials that outline their specific role in the program. These materials should explain the benefits of being a part of this program. For example, the financial benefits from reduced travel costs, the reduced travel times for short distances, and the health benefits of employees. The materials should also include how the University of Worcester will negate a few of the institutional barriers that are a part of pool bike schemes. In our research, we learned that initial costs, maintenance, and liability are common institutional barriers to business pool bike schemes. In the survey, employers indicated that they



were concerned with both maintenance and liability. The marketing materials would need to compare the costs for the program versus if the company invested in a pool bike scheme for themselves to explain the membership fee. For the Woo Bikes scheme, maintenance is handled by the university. This should be explained in the materials to ease employers concerns about having to handle that aspect of the scheme. The general steps maintenance should be included so that employers are not concerned that acquiring it will be a hassle. The marketing materials should also include a section on how liability works. They have indicated they are concerned and those should be addressed. By addressing these barriers and providing evidence that the scheme is beneficial to the business, employers will be more willing to participate in the Woo Bikes scheme.

We also recommend identifying cycling champions within the community and at individual businesses. A cycling champion is someone who advocates for cycling and encourages other people to cycle. These are the people who create interest because of their enthusiasm for cycling. By identifying these people within the community, Woo Bikes can use their excitement and experiences to encourage others around them to bike as well. After a few businesses agree to participate, they are transformed into business cycling champions. Their experiences should be gathered and used to promote the program through testimonials, social media, and other means. By sharing these good experiences, businesses may be more willing to give Woo Bikes a try.

**Authorship**

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## **Chapter 1: Introduction**

One of the primary goals of The Worcestershire County Council's Energy Strategy is to reduce carbon emissions by 50% by 2030 (Egnita Consulting, & Worcestershire Local Enterprise Partnership n.d.). As part of this strategy, the County Council has invested £8m over two years for improvement projects to the cycling and walking paths throughout the county (Worcestershire County Council, 2020). The City of Worcester has set a more ambitious goal to achieve net zero carbon emissions by 2030. Promoting cycling is one aspect of the city's emissions reduction strategy and the University of Worcester is a key contributor in these efforts.

The University of Worcester has been encouraging bicycling as part of its sustainable travel strategy for several years. The University began the Woo Bikes bicycle share scheme in 2012 to encourage students and staff to bike more and to reduce the university's overall carbon footprint. The University added electric bikes in 2019 to encourage greater participation, and the e-bikes have proven very popular. The City Council recently received a Local Government Association (LGA) grant to collaborate with the University of Worcester on a pilot scheme whereby Woo Bikes would place e-bikes with local employers for a trial period between January and June 2021. The trial is intended to give employers and employees the chance to experience the use of e-bikes for commuting and business travel.

The goal of this project was to assist the University of Worcester and the Worcester City Council in rolling out the pilot e-bike sharing program. The team identified three objectives to achieve this goal:

- Review current and best practices in the promotion and management of bike share schemes, especially work-based schemes.
- Evaluate employer interest in the bike share pilot through a business survey and interviews.
- Evaluating employee interest in and concerns about an employer bike share scheme.

The team engaged in several tasks to accomplish these objectives, including interviews, a survey, and focus groups. Due to the COVID-19 pandemic, these activities were conducted remotely using Online Surveys<sup>1</sup>, Zoom, and Microsoft Teams.

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<sup>1</sup> Online Surveys is an online survey platform that is commonly used in the UK, and is also preferred by the University of Worcester.



## **Chapter 2: Background**

In this chapter, we trace the history and growth of bike-shares in England. We review the research on public opinions, attitudes, and behaviors regarding biking and bike-share initiatives, as well as other factors that have contributed to the successes and failures of such schemes. Finally, we examine local policies and programs in Worcestershire to encourage bike-sharing schemes, including the Woo Bikes scheme initiated by the University of Worcester.

### **2.1 UK Bike Share History**

Bike share schemes have grown dramatically in the last 20-25 years, but most schemes are limited to a small number of large cities. Figure 1 below shows some specific numbers of the skyrocketing bike share numbers worldwide from 1995 until 2017. There were very primitive bike shares that appeared sporadically around the world, but most bike shares are beginning to transition to apps, online booking and tracking, and the incorporation of electric bikes.

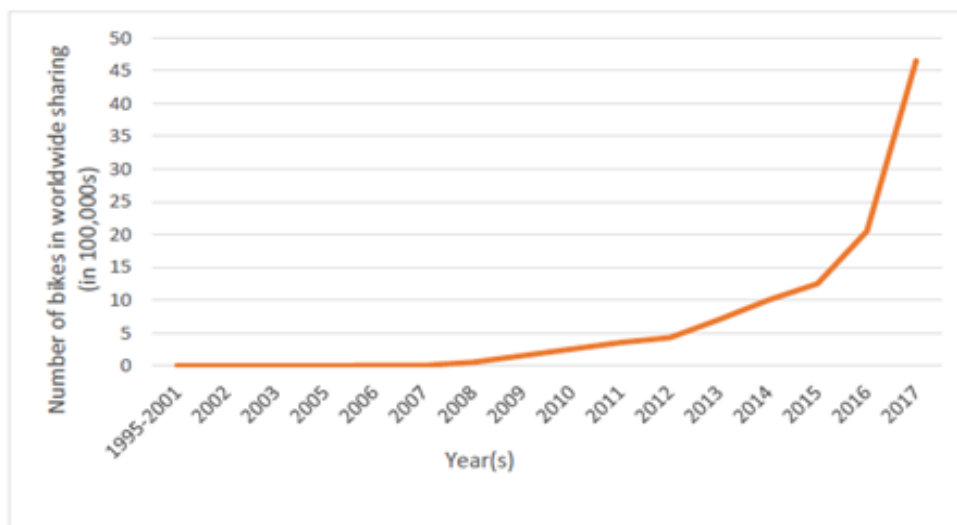


Figure 1: The growth of bicycle availability from bike shares from 1995-2017 (Fishman & Schepers, 2018)

Ever since the first public bike share was introduced in London in 2010 by Mayor Boris Johnson and underwritten by Barclays, more and more towns and cities in the UK have initiated bike-sharing schemes (Lamy, 2019). Bike shares have become increasingly popular in England,

since 2010, but London has been far and above the frontrunner in popularity of cycling and bike shares overall. This is mainly because improvements to infrastructure in London make it safer and more pleasant to cycle. The effects of London’s infrastructure improvements can be seen in Figure 2 below, where it is shown to have the second highest number of bicycles in bike share schemes compared to some of the biggest cities in the world. Cities like Worcester have not had nearly the success in large part because they have not yet been as successful in implementing more bike-friendly transport infrastructure.

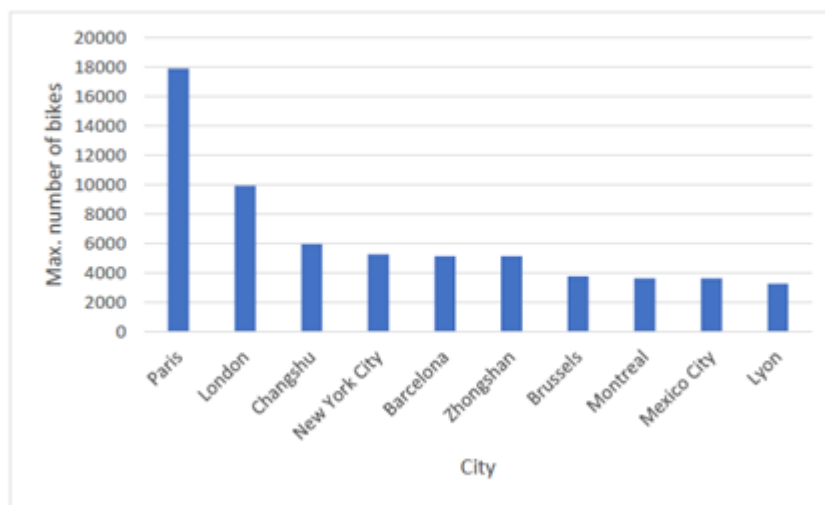


Figure 2: The ten cities with the biggest bike share systems, in order of number of bicycles observed (Fishman, 2015)

Multiple other companies aside from Barclays, including oBike, Urbo, Mobike, and Ofo, have offered bike shares in London. The “Boris Bikes” (originally underwritten by Barclays but now sponsored by Santander) started with on-street docking stations. The docking stations are located in numerous locations around the city, especially near popular transportation hubs (e.g., train and Underground stations) and destinations (such as museums). Users book online or at a kiosk next to the docking station and may return the bike to any other docking station in the system. Most companies rent by the hour. Recently, newer companies like oBike and Ofo have introduced a new concept called dockless bike sharing. Eliot Fishman explains “using GPS-based tracking systems and QR codes, dockless bikes can be unlocked and dropped off across a wider area, and this may include areas of a city with less bicycle infrastructure (bike lanes and

paths),” (Fishman, 2018). Dockless biking is a significant development for bike shares, since riders are not obliged to return bikes to specific locations but can drop off bikes wherever they wish. There have been some problems with dockless biking throughout England, mainly due to vandalism and mistreatment of the bikes. An article written in *The Guardian* by Niamh McIntyre and Julia Kollwe explained that there had been a “slew of local news reports [in Sheffield] about bikes dangling from the trees and set alight for fun,” (McIntyre & Kollwe, 2019). This particular case had to do with the dockless bikes company Ofo, and the article further went on to say that “Ofo had removed all 2,000 bikes [6 months later],” (McIntyre & Kollwe, 2019). This is not a problem that was just isolated to Sheffield, but other companies in the UK have dealt with similar problems and have been forced to move out or change tactics to make sure no further damage would be done to their bikes. There are other negative aspects of bike shares that have made bike shares less successful, like “...the most critical problem for conventional bike-sharing schemes is that station-based operations do not allow door-to-door convenience; traditional dock-based bike-sharing assumes that users can rent a bike from one of the existing bike-sharing stations and return it either to the original station or another station in a different location after using them,” (Nikitas, 2019). By contrast, Nikitas notes many positive aspects of bike shares including “people’s willingness to ‘allow’ their cities to invest more in bike-sharing”, “acting as a complement to existing public transit”, and other smaller features like “the low subscription fee, the availability of bicycles throughout the city, the subsidies from the local authorities,” (Nikitas, 2019).

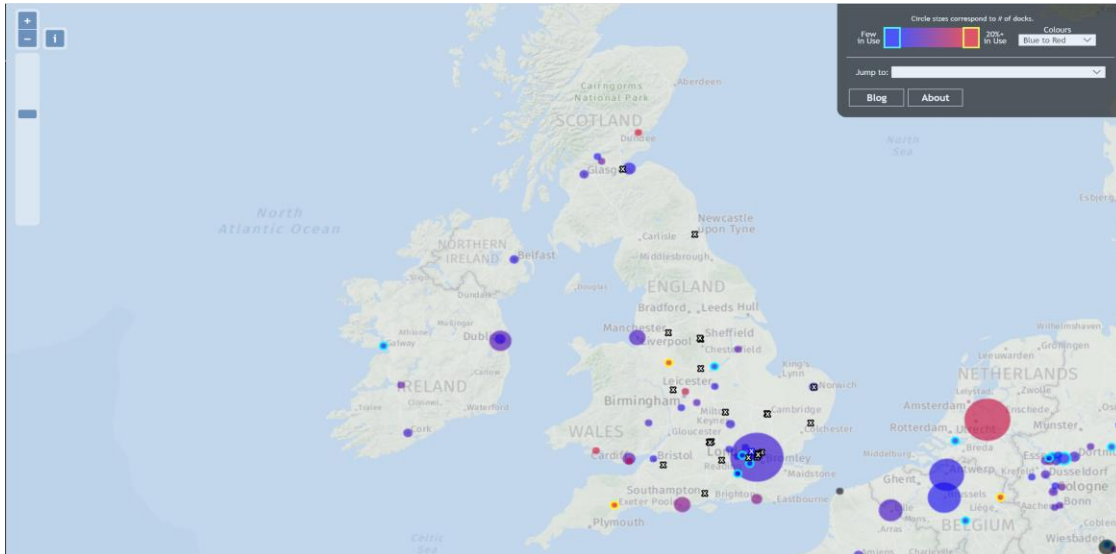


Figure 3: Map of bike shares in the UK (Bike Share Map, (n.d.))

Later in the 2010s, companies like Ofo and oBike began to introduce more electric bikes to their fleets. E-bikes “increase the attractiveness of bikeshare to those who may not have previously seen it as an option. Longer trips, challenging topography, excessive heat and other factors associated with physical exertion can act as barriers to transport cycling generally” (Fishman, 2016). In 2016, CoMoUK asked why people would use a public electric bike instead of a pedal bike. The survey (Figure 4) confirmed Fishman’s assertions.

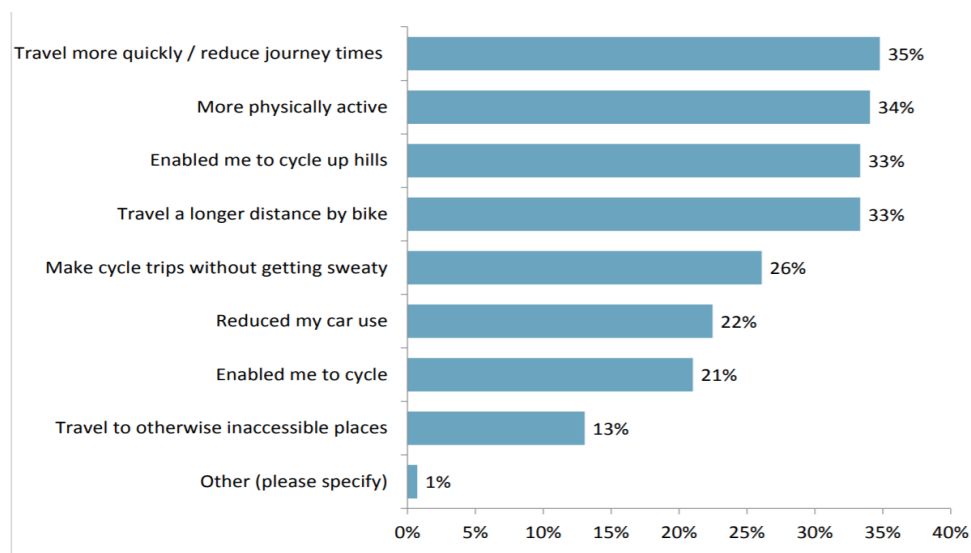


Figure 4: CoMo survey data about e-bike benefits (CoMo, 2016)

Eliot Fishman details many of the benefits of bike share schemes, including GHG emission reductions, individual financial savings (i.e. avoiding fuel, parking, and other costs associated with car ownership), and as a way to connect the “last mile” from public transportation to the desired destination (Fishman, 2016). The “last mile” is a major reason that bike shares are growing in popularity. A survey of bike share members conducted by Transport for London in 2014 found that “52% of respondents report[ed] that their last trip was commuting to/from work, with no other trip purpose accounting for more than 10%,” (cited in Fishman, 2016, p. 7). More than 1,000 bikes located in England at 100 different railway stations (Lamy, 2019) to meet the demand for ‘last mile’ transport.

## **2.2 Perceived Benefits and Barrier to Bike Shares**

Previous studies have found that there are many benefits to bike shares, including reductions in GHG emissions, in fuel consumption and congestion, and gains in health and financial savings for the individual (Fishman, Washington, & Haworth 2013).

Bike share schemes have become increasingly popular in recent years and even more so during the pandemic and the decision to participate in a scheme is based on a balance between the perceived benefits and barriers. Convenience stood as the largest perceived benefit of bike share schemes, with the allure of time and financial savings also proving to be a strong motivator (CoMo UK 2019 Fishman 2016). As seen in Figures 5 and 6, other strong motivators included health or environmental benefits, fun, and the proximity of the docking station to one’s home or place of work (CoMo UK 2019, Fishman 2016). It should also be noted that the 2020 CoMo survey featured a slightly different order of perceived benefits, with the importance of each likely varying as a result of lockdowns related to the COVID-19 pandemic. Fewer respondents indicated that cycling would make their journey easier or would save time, likely as a result of most business being conducted virtually throughout 2020. Conversely, “Fun and fresh air” and “exercise/physical health benefits,” became the benefits with the most importance, also as a result of people being confined indoors for much of the time (CoMo UK 2020).

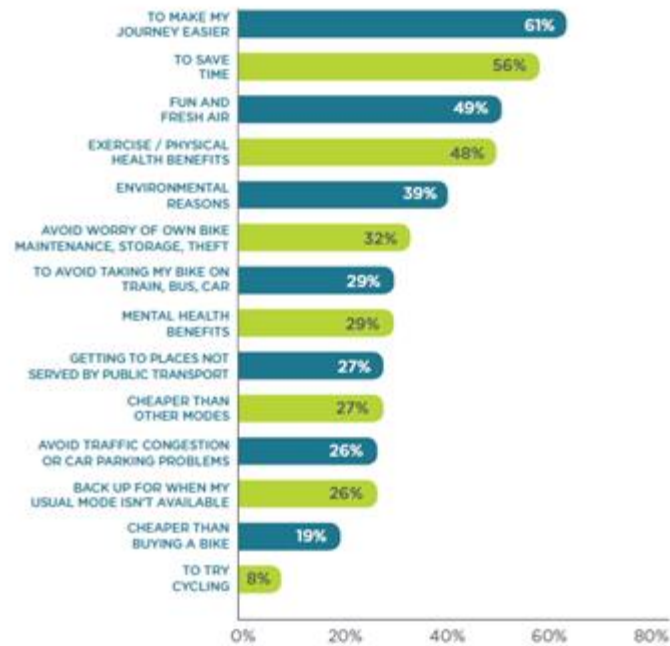


Figure 5. Perceived benefits of using bike shares (CoMo 2019).

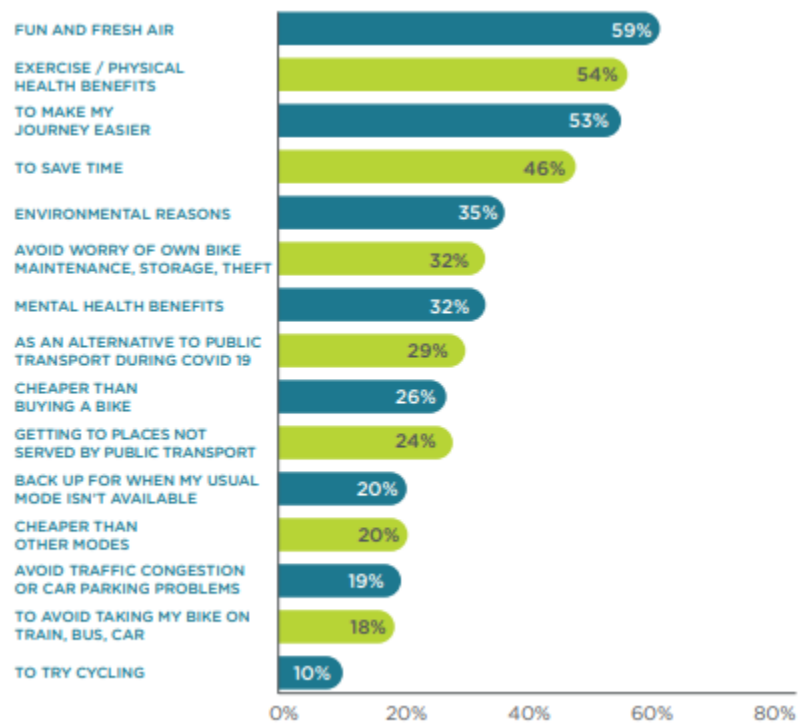


Figure 6. Perceived benefits of using bike shares (CoMo 2020)

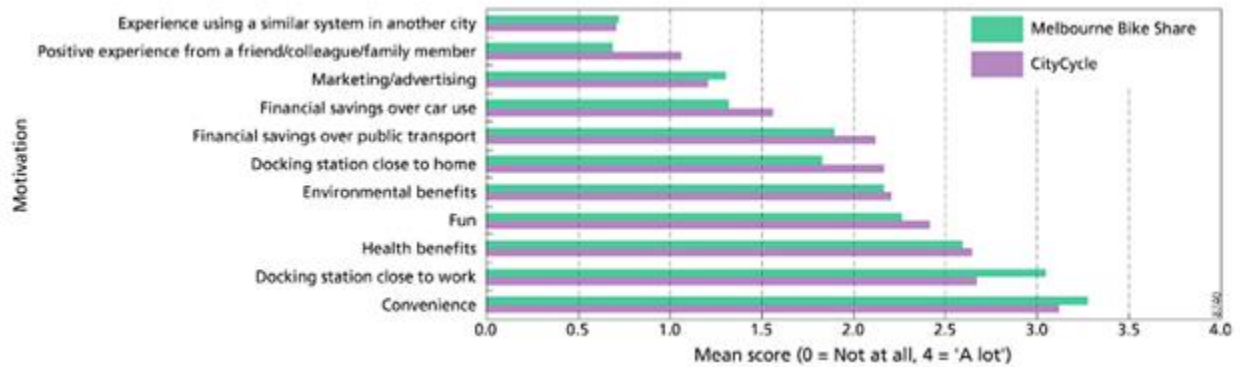


Figure 7. Factors encouraging participation in bike shares in Melbourne (Fishman 2016).

By contrast, a survey of CityCycle users in Brisbane (Figure 7) found that while convenience may seem one of the key benefits of the bike share program, in the eyes of the non-user public, the perceived convenience of cycling is unable to compete with the perceived convenience of driving. Other concerns include concerns about bike riding within traffic-heavy areas and the lack of docking stations within a close proximity to one's home. Additional surveys found that customers tended to prefer hybrid bike share models over purely dockless or purely station-based schemes, and that others preferred using their own bike or had encountered issues with the system when trying to book a bike (CoMo UK 2019).

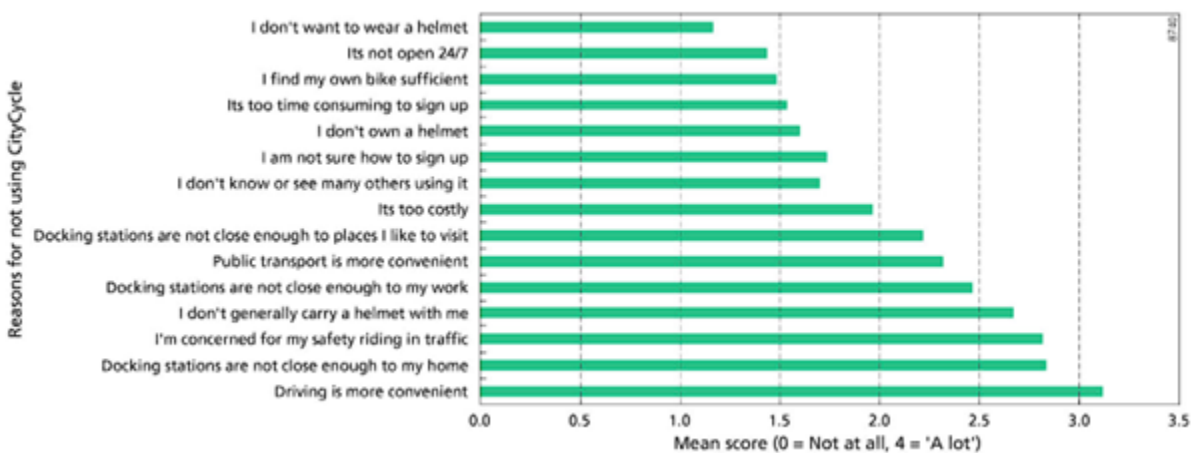


Figure 8. Factors discouraging participation in bike shares in Melbourne (Fishman 2016).

Helmets also served as a strong barrier to participation in bike share programs. Fishman's research gathered that throughout various cities, mandatory helmet policies were implied to be a reason for lower use of bike share schemes, though it appears to be less of a concern for users than other factors (Fishman 2016). Though Fishman notes that there is limited research on this topic, it is worth noting that while the UK does not have mandatory helmet policies or laws, the official stance of Worcestershire County is that of encouraging helmet use as a component of safe cycling practices (Worcestershire County Council 2014).

### **2.3 Profile of Bike Share Users**

When determining how to grow bike share schemes, it is also important to understand the demographic profile of potential users. Collaborative Mobility, also known as CoMoUK, is a group dedicated to advocacy for transportation share schemes, including bike shares. The organization has conducted numerous surveys over the years in order to gain data on how those across the United Kingdom feel about bike shares and determining why those who use them utilize the services.

In a 2019 study, CoMoUK estimated that there were over 600,000 current active users from throughout the United Kingdom, though around 500,000 of those were found within the London area (CoMo UK 2019). Their 2020 study found that 72% of bike share users were between 25 through 54 and 72% of users were employed. Besides the background information on the participants, the survey found a wealth of other useful information (CoMoUK 2019, CoMo UK 2020). Additionally, findings from Fishman et al. (2013) found that bike share participants in London were more likely to be male and affluent, while also finding that a lower rate of adoption amongst lower-income individuals was more likely a result of the locations of the docking stations, rather than disinterest in the programs (Fishman et al. 2013)

Among 1220 respondents who used bike share for commuting, CoMoUK found (Figure 9) that before changing their commuting method to cycling, 32 % of the respondents walked, while a 30 % used public transport (such as the bus or the train), and 17 % previously used a car. Additionally, 37 % of the commuter respondents reported using their car less than they did previously. It should also be noted that amongst respondents, those who used electric bikes (e-



bikes) within the bike shares reported using their cars less as compared to the sample as a whole (CoMoUK 2019).

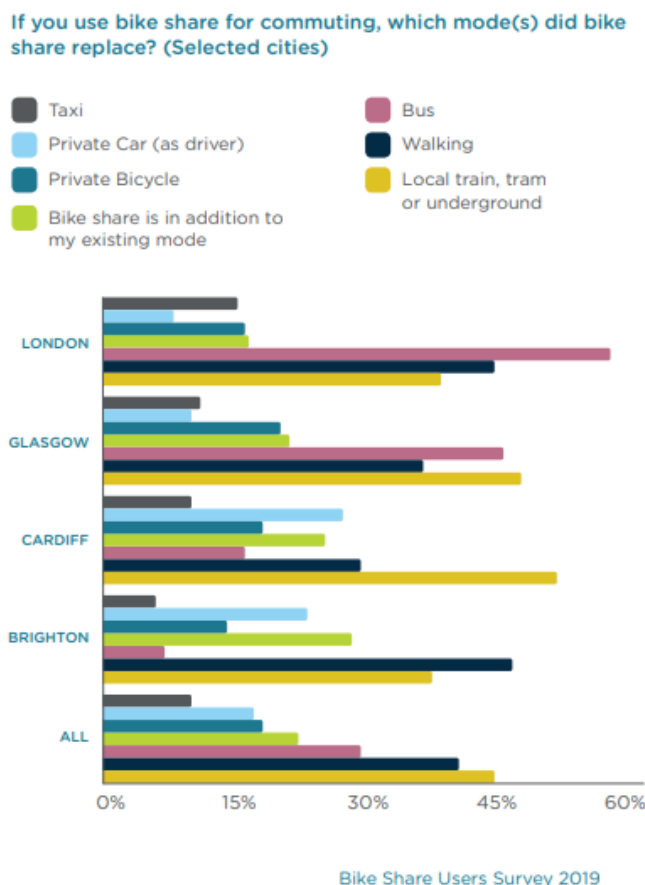


Figure 9. Modes of transportation that cycling replaced for bike share users (CoMoUK 2019)

Those using the bike shares reported a high rate of satisfaction within the CoMoUK survey. At least 70 % of respondents reported the majority of the features of the scheme were satisfactory, with specific positive elements including the gears, customer service, and communications, while criticism was directed at station coverage. Officials at the city, county, and university levels in Worcester are looking to capitalize on the satisfactory response to bike shares by incorporating bike share schemes into their environmental policy measures.

## 2.4 Local Policies on Bicycling

The Worcestershire County Council is responsible for transportation planning, and promotes active transport such as walking and cycling through various policies and programs. The *Worcestershire Energy Strategy 2019-2030* lays out the county's plan and goals for promoting sustainability (Egnita Consulting, & Worcestershire Local Enterprise Partnership n.d.). This strategy aims to reduce carbon emissions by 50% by 2030 and targets the transportation sector in particular. In *Worcestershire's Local Transport Plan (LTP) 2018 - 2030*, the Council lays out the issues and priorities for investment in transportation (Worcestershire County Council, n.d.). The plan includes promoting cycling to decrease roadway congestion and allocating funds to support road safety schemes, such as cycling. Several cycling schemes and potential funding sources are listed in the appendix of the LTP. The County Council has invested £8m over two years for improvement projects to the cycling and walking paths throughout the county (Worcestershire County Council, 2020). These projects range from changing traffic signals and speed limits to widening streets to allow for safer travel for active transport. The County also promotes cycling by providing information on walking/cycling routes, safety information, and encouraging cycling clubs (Worcestershire County Council, n.d.). Cycling routes through Worcester can be seen in Figure 10. The green lines represent the cycling routes located throughout the city (Carey, C. 2021). Even though the County Council has promoted cycling and has plans in place to develop it, they have been criticized for failing to secure funds offered by the national government. Last year the Council bid for funds from the government for cycling and only received half of the bid amount (Bowden, 2020). Cycling advocates claim that the Council's proposals included inappropriate cycling schemes that failed to meet the standards and that is why the full amount was not received. The Council's cabinet member for transport, Alan Amos, is under scrutiny because he has pushed for bike bans in certain areas and views the increase in cycling during lockdown, as just a phase (Bowden, 2020). There is grounding concern that the Council is failing to encourage active transport as vigorously as it might even though it is a major point of the Local Transport Plan (LTP).



Figure 10: Cycling Routes in Worcester (Carey, C., 2021)

The City Council is responsible for developing and enforcing policies with regard to environmental health, parking, streetscapes, recreation, and transport in coordination with the Worcestershire County Council. In 2019, the Council declared a climate emergency and plans to become carbon neutral by 2030 (The Worcester City Council n.d.). The Council is trying to increase awareness, reduce greenhouse gas (GHG) emissions, and inform the public on what they can do to help. The Council's draft *Environmental Sustainability Strategy* outlines the city's goals for sustainability (Corrall, 2020). The draft's main principles are to maximize opportunities to reduce the impact on the environment in places they have control over, work closely with local organizations, businesses, and residents to encourage action, lobby the national government for policy changes to achieve goals, and to apply for funding and support others to do the same. It also places an emphasis on changes in the transport sector in particular. The draft strategy suggests the city can encourage the use of electric vehicles (EVs) by providing more charging stations and offering discounted parking for them. They also are aiming to increase the use of public transport over the use of personal vehicles. The Council also states that journeys under two miles are to be targeted for active transport and they hope to work with the County Council to support existing schemes such as the Woo Bikes scheme.



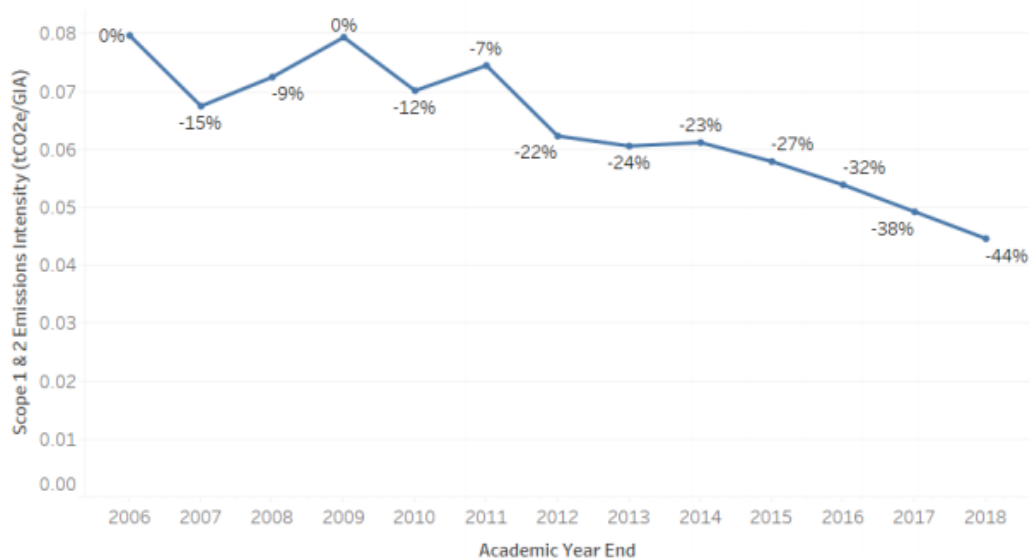


Figure 12: The University of Worcester carbon emissions, 2006-2018

## 2.5 Woo Bikes Scheme

The University of Worcester's *Mobility Plan for 2019 - 2021* (University of Worcester, 2019) outlines strategies for reducing carbon emissions from surface-transport by giving alternative options to car travel. One of these strategies as part of their plan is the institution of the Woo Bikes Share. This program was started in 2012 as part of the University of Worcester's work toward increased sustainability on campus. Originally only including standard pedal bikes, Woo Bikes introduced e-bikes to the initiative in 2019. The program is accessible to both students and staff and has since expanded with the introduction of e-bikes that have rechargeable batteries with a 3 hour lifespan. The program now has 50 e-bikes and 50 standard pedal bikes available (University of Worcester, n.d.).

Both students and staff must buy a £45 annual membership to access the bikes. Users can easily sign-up for the membership and rent bikes through the "Woo Bikes System." The website also displays what types of bikes are available to rent at either the City Campus or St. John's Campus in real time. Hubs around both campuses allow for access and return for the bikes and the batteries for e-bikes 24/7. See the map below, in Figure 13, for locations of these hubs. Late fees of £2 and £4 for pedal bikes and e-bikes respectively each day the bike is not returned. In order to be able to rent a bike again, users must pay all outstanding balances. There are places to

store the bikes at various locations across the University, including bicycle storage at the St. John's Campus. The Woo Bike Share program is being promoted as a fun and healthy alternative to getting around campus and the city. By 2023, the University plans to have options for more sustainable travel strengthened and hopes to be able to share their Woo Bikes program throughout Worcestershire.



Figure Map 13: Woo Bike Hubs

Survey results from a previous IQP showed that not many students had even heard about the Woo Bikes program (Lightbody, Terry, Vollum & Gibbia, 2018). The survey revealed that International Students were most likely to participate in this bike share initiative because they were not able to have cars on campus and it was the most convenient way for them to be able to travel. Other students surveyed expressed concern with the price of memberships, weather and road conditions, and bike responsibility. Students indicated that smaller payment plans or reduced cost would entice them to potentially join the program (Lightbody et al., 2018).

More recently, the City Council has received £18k in funding from the Local Government Association (LGA) for the purchase of additional e-bikes and equipment to supplement and complement the Woo Bikes initiative. The Worcester City Council and the University of Worcester have developed a *Project Plan* as to how the money will be allocated to the program as seen in Figure 14 below:

	Estimated cost
Purchase of 7 e-bikes to supplement the existing University e-bike stock	£7,000
Purchase of bike trailers, towbars, bike panniers and bike racks, lights, helmets and other associated equipment	£2,500
Set up of the bikes, bike trailers, towbars, panniers etc and maintenance over the project delivery period	£2,500
Creation of digital marketing content such as case study videos (option to appoint fixed term post to achieve this, 1 day a week or total of 100 hours)	£3,000
Marketing materials (including side panels for the trailers, stickers etc)	£1,000
Engagement with employer hubs and employees across those organisations (option to appoint 1 day a week fixed term post to achieve this)	£2,000

Figure 14: University of Worcester Project Plan Money Allocation

The project has a timeline of about six months from January - June 2021. It includes “engagement with and agreements with new employer hubs” (University of Worcester & Worcester City Council, 2021). The University and the City Council have asked our team to help in the roll out of this new project and we describe our approach in the next chapter.

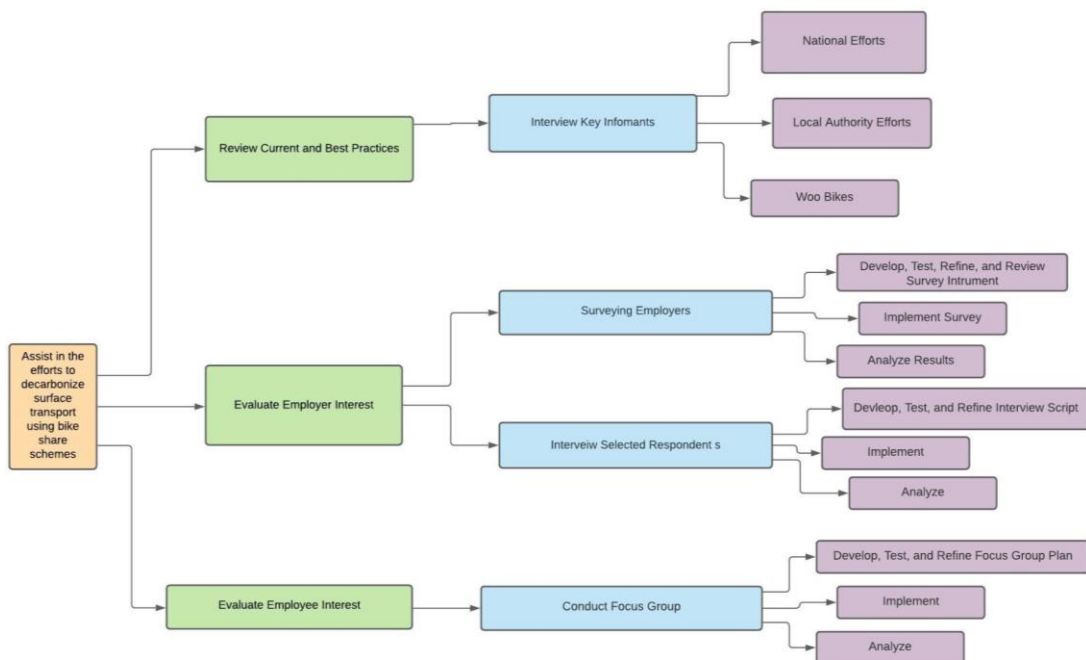
## Chapter 3: Methods

### 3.1 Introduction

The goal of this project was to assist the University of Worcester and the Worcester City Council in rolling out the pilot e-bike sharing scheme. This project had three main objectives:

1. Review current and best practices in the promotion and management of bike share schemes, especially work-based schemes.
2. Evaluate employer interest in the bike share pilot through a business survey and interviews
3. Evaluating employee interest in and concerns about an employer bike share scheme.

The team engaged in several tasks to accomplish these objectives, including interviews, a survey, and a focus group. Figure 12 summarizes those tasks relative to the objective. Due to the remote nature of this project our interviews were conducted using Online Surveys, Zoom, and Microsoft Teams.



*Figure 15: Visual Representation of Objectives and Associated Methods*



### **3.2 Objective 1: Review Current and Best Practices**

To help in implementing the roll out of the Woo Bikes pilot scheme, we first reviewed some of the lessons learned by others trying to implement similar schemes. In particular, the team wanted to find out how other cycle schemes have succeeded or failed and what barriers they faced to develop a better understanding of what Woo Bikes and the Worcester City Council have to overcome. We conducted interviews with several people involved in similar efforts elsewhere in the UK. Due to the remote nature of this project, the interviewees chose their preferred platform for the interview (Zoom, Microsoft Teams, etc..) The team asked questions based on the position of the interviewee but stayed on the topics of cycling and bike shares. Appendix A lists sample questions although we modified the actual questions to match the interviewees interests and expertise. We began each interview with a preamble (see Appendix A) that explained our research and solicited the interviewee's consent. The interviews lasted 30 minutes to an hour. The whole team participated in each meeting; two of us asked questions, while the other two took notes. We asked permission to record each interview and quote the interviewee. We explained that we would give them the opportunity to review any materials from the interview that we used in our final report prior to publication. Table 1 lists the name and affiliation of our interviewees as well as the date we interviewed them.

#### *National Efforts to Promote Cycling*

To understand bike shares and cycling in the UK, the team interviewed people that had a broader view of the topic. We interviewed Chris Oakley, the Head of Commercial and Business Development at Halfords, a bike distributor. We asked questions about public preferences and his thoughts on bike shares (see the interview script in Appendix C). We also interviewed Antonia Roberts, the Deputy Chief Executive at CoMo. CoMo is an organization that supports sustainable transport schemes. We asked her questions about successful and unsuccessful bike share schemes, barriers she's facing at a national level, and business bike shares (see interview script in Appendix D). We also reviewed multiple sources from around the UK on how to build a workplace pool bike scheme to get a better understanding on how these programs are formed and what information has to be collected to run one effectively.

*Table 1: List of Interviewees, Position, and Date*

Name	Position	Date
Grace Couch	Climate and Ecological Emergency Project Officer for the Swale Borough Council	April 19, 2021
Raymond Dill	Former Environmental Coordinator for the Reigate and Banstead Borough Council	April 8, 2021
Naomi Goldman	Former Student Coordinator for Woo Bikes	April 15, 2021
Sam McCarthy	Projects and Marketing Manager at Worcester Business Improvement District (BID)	May 5, 2021
Peter McDonald	Travel and Transportation Planning Officer for the Croydon Council	April 7, 2021
Alper Muduroglu	Founder of Peddle My Wheels	May 6, 2021
Chris Oakley	Head of Commercial and Business Development at Halfords	April 28, 2021
Antonia Roberts	Deputy Chief Executive at CoMo	April 27, 2021

*Local Authority Efforts to Promote Cycling*

The team wanted to understand the issues that cycling and bike shares had from a local authority level. We interviewed several individuals from different councils that had experience in promoting cycling. During these interviews we asked questions about their roles, schemes they have been a part of, and barriers faced when trying to promote cycling. These interview questions are in Appendix E. We interviewed the Travel and Transportation Planning Officer for the Croydon Council, Peter McDonald. His interview was around an hour long and he gave us permission to follow up through email with any further questions. We also interviewed Raymond Dill, who is the former Environmental Coordinator for the Reigate and Banstead Borough Council. His interview also lasted an hour and permission was given to reach out for further questions. Lastly we interviewed the Climate and Ecological Emergency Project Officer for the Swale Borough Council, Grace Couch. This interview lasted 30 minutes and we were again

given permission to reach out if we had any other questions. With these interviews, we were able to better understand what challenges different schemes have faced and what Woo Bikes will probably face as well.

To further understand the efforts to promote cycling at the local level we also reached out to several local cycling organizations. The team had little response rate to these interview requests but we were able to interview Alper Muduroglu, the founder of Peddle My Wheels. This interview lasted 45 minutes and we were given permission to reach out if we had any further questions. He also asked to be informed of Woo Bikes as it progresses. From this interview, the team was able to better understand what other efforts were being taken to promote cycling. These interview questions are located in Appendix G.

### *The Woo Bikes Program*

The team needed to gain understanding about Woo Bikes to better implement our objectives. From the beginning of this project we questioned our sponsors on the inner workings of Woo Bikes. We also interviewed the former Student Coordinator for Woo Bikes, Naomi Goldman. We asked questions about her roles, barriers for Woo Bikes, and her thoughts on a business bike share. This interview script is located in Appendix F. It lasted an hour and afterwards she sent us materials to aid our research and gave permission to contact her with any follow up questions. Her interview gave us an insider's point of view on Woo Bikes. Her interview led us to ask one of our sponsors, Katy Boom, more questions.

### **3.3 Objective 2: Evaluating Employer Interest in Bike Share Pilot**

This objective entailed two major pieces: (1) we conducted an online questionnaire survey of Worcester employers to gain an understanding of the possibility of instituting the pilot e-bike program at their company; (2) we planned to conduct follow-up interviews with a subset of respondents to gain further detail about their perspectives on the pilot program, but after reaching out to the respondents multiple times, none agreed to participate.

### *Surveying the Businesses*

The survey was developed and refined over the course of the term in close consultation with our sponsors. The survey consisted of questions that asked about the company itself, previous/ongoing use of bikes, current or previous participation in the Cycle2Work scheme by the company, potential use for a bike share in the future, use of bike trailers and any concerns that the employer may have. The survey also contained some open-ended responses but was primarily closed response and multiple choice to speed up completion and encourage higher participation rates. The survey was designed to be anonymous but respondents could choose to identify their organization and contact the team if they were willing to participate in a follow-up interview. We designed the survey to collect the contact information of potential interviewees, separately from the survey responses to maintain anonymity. This survey was delivered through an online platform called “Online Surveys” which is used commonly by universities in the UK and is preferred by the University of Worcester. The survey instrument was pretested with our advisor and sponsors to identify any problems in comprehension, content and flow. The survey was then revised as needed based on this feedback. We sent the survey to a local business for additional review and comment, but received no response prior to distribution.

Katy Boom and Ruth Corral made requests to various local entities in Worcester including the Chamber of Commerce, Worcester BID, and others to solicit business participation in the survey. The survey link was also posted on the University of Worcester and Worcester City Councils websites, blogs, social media pages and newsletters. The University and City Council sent out a press release announcing the pilot and our research project. We used the built-in statistical analysis and graphing functions to analyze the data using basic descriptive statistics. The team coded and analysed the open-ended responses for consolidation of data into smaller sets of consistent categories. These questions helped the team to get an indication if there would be a potential of people willing to join the program and what challenges the team may face when trying to implement the bike share at these businesses.

The team had planned to conduct follow-up interviews with those who participated in the survey, but due to lack of response, we were unable to do so. The survey had asked respondents to contact the team if they were willing to take part in a follow-up interview. Although the

surveys were anonymous, the interview portion allowed for the employer to click a button to be directed to a new prompt. None of the respondents actually contacted the team, but we did try to reach out to the businesses who participated in the survey through email. All of these businesses either declined or did not respond to our request.

### **3.4 Objective 3: Evaluating Employee Interest and Concerns**

To round out the results of the survey, we conducted two focus groups with employees to gather additional feedback on their level of interest in and concerns about an employer-based bike share scheme.

#### *Planning Focus Group*

At the suggestion of our sponsors, the team participated in two informational training sessions on focus groups hosted by Kris De Meyer of King's College London on April 9 and 16. Professor De Meyer conducted these training sessions as a service to recipients of LGA grants. Professor De Meyer guided the team through the process of developing a focus group, citing the need to develop a strong focal point for the session, as well as a "story arc" to map out the topic areas for discussion and associated breakout room activities. After discussing with our sponsors, the team made the decision to orient the session around collecting data and information from employees in the Worcester area. We hoped to gauge opinions from these employees on their current feelings on cycling and bike shares, as well as their thoughts on participating in a bike share within their workplace. Using contacts from our sponsors, the team reached out to Worcester-area employers and gathered volunteers via a registration form. This form included a preamble explaining the purpose of the session and informing the participants of the reward for participating, which was a £10 voucher given to each volunteer, provided by the Worcester City Council from the LGA grant monies.

#### *Enacting Focus Group*

The team ran one focus group on May 5th, with the session running for 60 minutes in the evening. The team developed a plan to split each session into various different exercises, beginning with a five-minute welcome exercise designed to get the participants comfortable with

each other and comfortable with using camera and participant functions in Zoom. Following that, the participants were tasked with discussing their current commuting methods before the team explained the current and planned implementation of the Woo Bikes pilot scheme. The team tasked participants to discuss the pros and cons of a workplace bikeshare, after which we asked them if they felt Worcester was a bike-friendly city. The sessions concluded with time for questions and a closing section in which the participants were polled on their personal interest in the program and their thoughts on whether their employer should participate in the program.

We present the results of these data gathering approaches in the next chapter.

## **Chapter 4: Findings**

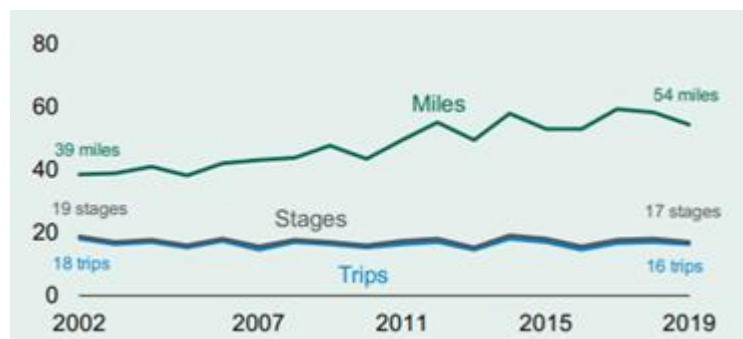
In this chapter, we discuss current and best practices to promote cycling for commuting and business purposes based on additional background research and interviews with proponents and practitioners. The team also conducted a survey to assess employee perspectives on participating in a bike share scheme at their business and a focus group to evaluate employer interest and concern.

### **4.1 Current and Best Practices to Promote Cycling for Commuting and Business Purposes**

In order to assess current practices to promote cycling and bike shares in the UK, the team conducted additional background research and interviewed several proponents and practitioners at the national, regional and local level. We explored what is currently being done to promote cycling, the barriers faced by different initiatives, and the factors that lead to success or failures.

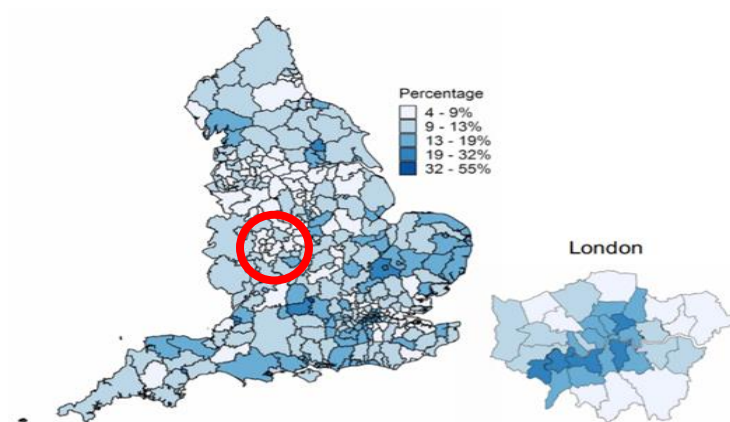
#### *Recent Trends in Cycling in England*

Between 2002 and 2019, the number of bicycle trips in England has remained relatively constant, but the average number of miles traveled by bike has increased from 39 to 54 miles. This trend can be seen in Figure 13 from the Department for Transport (DfT) based on information on walking and cycling in England based on the National Travel Survey and the Active Lives Survey.



*Figure 16: Bicycle Trips in England 2002-2019 from the DfT*

The latest data available from the DfT show that between 2018-2019, 11% of adults in England made at least one trip per week by bike. This rate varies by location though, ranging from a high of 55% of adults in Cambridge to a low of 3% in Barking and Dagenham (see Figure 17). Worcestershire County is highlighted in red in Figure 17 and has a relatively low rate of cycling compared with many other areas in England. About 10% of adults in Worcestershire County and the City of Worcester cycled at least once per week, but only 2% cycled 5 or more times per week (see Table 2).



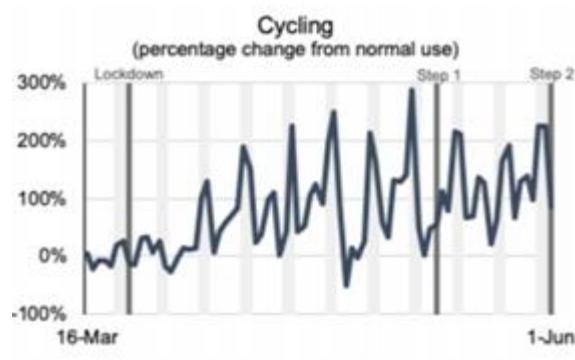
*Figure 17: Map of Proportion of Adults Who Cycle at Least Once a Week in England  
(Department for Transport, 2020)*

*Table 2: Table of Percentages of Adults who Cycle in England (Department for Transport, 2020)*

Area name	At least:	Any cycling			
		Once per month	Once per week	Three times per week	Five times per week
<b>ENGLAND</b>		<b>16.1</b>	<b>11.2</b>	<b>5.3</b>	<b>3.2</b>
Worcestershire		14.8	10.2	4.6	2.3
Bromsgrove		11.2	7.9	3.8	3.1
Malvern Hills		15.9	10.7	5.1	1.9
Redditch		12.2	9.8	3.8	2.5
Worcester		16.9	9.4	4.5	2.2
Wychavon		17.8	12.7	5.0	2.1
Wyre Forest		13.5	9.9	5.1	1.8



Since the beginning of the pandemic, cycling behavior has changed dramatically. There has been almost a 200% increase in cycling in the UK due to the coronavirus lockdown. Grant Shapps, the UK Secretary of State for Transport, stated at a coronavirus briefing (June 4, 2020): “Despite fewer people travelling over the last few weeks during this crisis, we’ve actually seen around 100 per cent increase in weekday cycling and at weekends that increase has been up to 200 per cent, compared to the pre-Covid-19 levels. We want to use this recovery to permanently change the way we travel, with huge levels of investment,” (Ballinger, 2020). These investments include a £2 billion in new cycling infrastructure as restrictions are lifted and the government is also offering “fix-your-bike” vouchers worth £50 to further encourage cycling. The growth in cycling during the pandemic with notable peaks on weekends in particular, is shown in Figure 18.



*Figure 18: Percentage Growth in Cycling Trips During the Pandemic (COBR, 2020)*

Following the pandemic, it is unknown how these patterns and trends may fare, but prior to the pandemic, there were very few people who regularly rode a bike to work or for business purposes. Between 2015 and 2019 in England, only 4% of commuting trips were cycled, a figure that has hardly changed in recent years. By contrast, about two-thirds of trips were made by car (NTS 0412).

Improved health, reduced traffic congestion, and reduced GHG emissions are among some of the known benefits of cycling. Recent studies, however, have shown that cycling in urban areas is faster than driving and may expose commuters to less pollution. For example, “[r]esearchers in Leeds used a pollution-measuring van to track commutes during rush hour – comparing 4km/2.5mile journeys in and out of the city. The cyclists reached their destinations in

the shortest time – 11 minutes, compared to 21 minutes for drivers, 25 minutes for bus users and 35 minutes for walkers. Over the course of the journey, cyclists were exposed to 12m pollution particles, compared to 20m for drivers, 19m for bus users and 55m for walkers,” (Arthurs-Brennan, 2018). Cycling instead of driving to a destination helps the environment and public health.

Given the benefits of cycling to work and for other business purposes, the UK government began the Cycle2Work scheme in 1999. Along with this, many local councils and businesses have created bike pools for business travel. These initiatives will be discussed further below.

### *Cycle2Work Scheme*

The Cycle2Work scheme has been around in the UK since 1999, and has continued to have successes in recent years. Under the Cycle2Work scheme an employer “buys” a bike for their employees to ride to work, and the employee ‘hires’ it through salary sacrifice. Salary sacrifice means the employer recoups their costs and the employee saves by not paying tax and National Insurance contributions on the monthly fees. At the end of the ‘hire’ period, the employees are usually offered the option to buy the bike from their employer. In 2019, the UK government updated the scheme overall, adding the option to purchase electric bikes as well as a pedal bike. The Department of Transportation said that these changes were made to help promote the increased use of cycling as a mode of transportation to limit traffic and congestion, speed up commutes, and reduce air pollution in the cities. The addition of e-bikes is intended to encourage employees who are less fit or active and those who live in hilly regions to cycle more. By 2019, “[more than] 1.6m people at 40,000 businesses [had] already used the existing Cycle2Work scheme, [and] 62% [were] non-cyclists, novice cyclists or occasional riders before signing up. The government reckons that economic benefits of at least £72m have come from improved physical fitness and associated health benefits, with 49% of users reporting that they joined the scheme to help them keep fit.” (Normon, 2019). In 2019, the government relaxed the £1000 purchasing limit to allow employees to purchase more sophisticated bicycles that might better meet their needs and demands.

As with cycling in general, the pandemic has had a substantial impact on the Cycle2Work scheme also. According to the C2W Alliance, as “The number of employees joining the Cycle2Work scheme has more than doubled as commuters make plans for returning to the workplace, amid growing concerns about the safety of using public transport as lockdown eases. New data from the Cycle2Work Alliance shows that in June there was a more than 120% increase in the number of people joining the scheme compared to the previous year. This built on a 52% increase in scheme participation in May 2020, compared to the previous year,” (Wall, 2020). Furthermore, in a recent press release, C2W says “37,754 employees obtained a bike through the scheme in June 2020 compared to 17,071 in June 2019. In May 2020, 26,300 people joined the scheme, compared to 17,300 in May 2019,” (Wall, 2020). In addition to the Cycle2Work scheme, employer bike pools have been a popular way to encourage more people to cycle and we discuss these next.

### *Bike Pools*

Many local authorities (such as Croydon and Swindon) and many businesses have created bike pools as a way to cut costs and encourage their employees to embrace cycling as an alternative mode of transport. A workplace bike pool is a scheme that provides bikes for employees to use for business travel. Many local authorities (e.g., Swindon and Greater Manchester) and other organizations (e.g., TfL, Cambridge University, and CoMo) provide information for businesses that wish to establish bike pools.

Bike Pools provide many benefits to those who participate in them. For employers, pool bikes have several financial benefits including generated savings and reduced travel costs (Swindon, n.d.). After the initial investment into the bikes and equipment, employers save money from the lack of public transport fares, parking charges, and pool car costs. A pool bike scheme can also lower the demand for parking from employees, freeing a percentage of the spots in use for something potentially more profitable. A pool bike scheme can be a time saver for both employee and employer (Palser, 2020). Time traveling is reduced when cycling short distances because it can provide a more direct, less congested route compared to public transport or even a personal vehicle. Employee benefits include improving health and improved options (TfL, n.d.). Regular exercise helps increase overall health and can prevent other health conditions such as heart disease. It has been shown that workplace exercise programs have reduced short term sick

leave by 6-32 % (TfL, n.d.). Pool bikes are immediately accessible to employees for their travels and increases the options for how they travel, their route, and door-to-door travel. Bike pools may also have benefits for the community as a whole. Increasing active transport within a community improves air quality and overall health of residents.

Programs such as these have some institutional barriers to overcome. For example, businesses may be hesitant to institute a bike pool because of a perceived lack of funds for bikes and safety equipment (TfL, n.d.). It is suggested that a business develops a business case where information is gathered and costs are compared to savings. Another barrier is lack of space to store the bikes on or near the facilities (TfL, n.d.). TfL suggests foldable bikes that are small enough to be stored indoors. There are also concerns about insurance and liability in which the employees are usually covered the same as they would be if they used a car to travel (TfL, n.d.). Understanding the institutional barriers before implementing a scheme is important for the effectiveness of the program.

There are also some behavioral barriers when it comes to implementing a pool bike scheme (Swindon, n.d). There can be a lack of confidence or concern over safety preventing individuals from participating. Cycling training can aid with both concerns; the training will create confidence and comfort while cycling. Some employees will have established travel habits and will be resistant to change or they simply are not interested in cycling. Taster sessions and group bikes can aid in overcoming these concerns. Both will generate interest and excitement while increasing comfort while cycling. Electric bikes (e-bikes) can aid those in poor health, those who have to tackle difficult terrain on their travels, and those concerned about arriving at work sweaty. E-bikes will allow employees to travel faster and without too much strain. Understanding these behavioral barriers helps those implementing the scheme generate interest and know how to address their concerns when marketing the scheme.

Employers must consider several factors to create an effective pool bike scheme. It is important to know the travel habits of the employees, such as the number of trips, costs, typical baggage, and whether the current mode of transportation can be reasonably replaced with a bike (TfL, n.d). Understanding how many employees already cycle, who is comfortable, who is interested, who would need training, and the general views the employees have of cycling will be useful in implementing a pool bike scheme. Infrastructure is a major factor that needs to be

considered when implementing a scheme. Cycling routes near work and facilities on site, including storage, parking, changing stations, and showers, are important structures to set up an effective scheme. Important aspects the employers have to take into account is insurance and cost compared to saving and benefits. Research on these factors will need to be done by the employers to verify that a pool scheme will be worth the initial costs of the equipment and the potential liability. These major factors are all important to consider before implementing a bike pool scheme to ensure success.

### *Croydon Experience*

Peter McDonald, Travel and Transport Planning Officer for the Croydon Council, has been trying for many years to encourage council employees and members of the public to cycle more through various initiatives ranging from a council bike pool to education and cycling proficiency programs at local schools (personal communication, April 7, 2021). Much of the funding for these efforts has come through TfL. One of the projects that Mr. McDonald setup included a bike pool scheme in the council as a demonstration project to show local businesses how a bike scheme might work.

Mr. McDonald invested considerable effort to set up and maintain the pool bike scheme for the Croydon Council. He conducted lots of initial research to determine how to set up the program along the lines outlined in the guidelines reviewed above. This research included reviewing other bike schemes, what types of bikes worked for the intended users, and what training needed to be provided. One of the major problems Mr. McDonald encountered was convincing the staff to 'buy in' to the program. The Croydon Council currently has a pool car scheme in place, in which they spend thousands of pounds on 23 pool vehicles. It took a considerable amount of time to convince the staff that money could be saved by replacing a few vehicles with a handful of bikes. To run a successful scheme there needs to be people who manage the program and a 'cycling champion' to maintain interest and enthusiasm about cycling. This has proved hard in the council because of staff changes. Initially, 40 employees expressed interest in the scheme but after the time it took to set up the program and management system only 4 showed up for the proficiency training. The program currently has 4 manual and 4 electric bikes, with 5 or 6 employees regularly using the bikes for business purposes. Some of the

unexpected problems that Mr. McDonald ran into were the bikes were too large and heavy for some employees and the concern about theft and damage in certain parts of the community

Peter McDonald also encourages local businesses to participate in the Cycle2Work scheme that was discussed in a previous section and Peddle My Wheels. Peddle My Wheels is a business based in Croydon and funded by several London borough councils to promote cycling through cycle training, repairs, and sales of new and second hand bicycles. This organization is discussed in greater detail in *Other Local Cycling Organizations*. By promoting these different programs, the citizens of Croydon have several ways to become involved in cycling.

Mr. McDonald has employed some other methods to promote cycling within his community. Major barriers faced include lack of confidence, safety, and bike storage so Mr. McDonald has been focusing on improvements to the infrastructure. He has been working on placing bike hangers on the streets to provide wider accessibility across the community. He has 30 installed already and is looking to place 30 more. During the 2020 COVID lockdown, the Croydon Council implemented some Low Traffic Neighborhoods (LTNs) to make cyclists safer. Some roads were closed entirely and/or transformed into a one way street to create LTNs that would be safer for cyclists, pedestrians, and children playing. After implementing this strategy, the council saw a 10-20% increase in cycling in these areas. However, in communities like Crystal Palace, which borders four other boroughs, the LTN was eventually removed because of complaints made by car drivers in the wider area about the increased difficulty they had getting to their destinations.

### *Reigate & Banstead*

Raymond Dill, former Environmental Coordinator for the Reigate and Banstead Borough Council, worked to promote cycling for most of his career (personal communication, April 8, 2021). Early on, he focused on establishing a culture of cycling in the younger generations. He did this by targeting schools with strategies like Car Free Fridays. Schools often have trouble with car congestion and the safety concerns that accompany them so they welcomed the idea. Almost all of the 52 schools of the area engaged in the program in the early 2000s. He also aided in setting up a cycling forum in 1998. It began with meetings once a week, where members started a quiet campaigning movement for infrastructure improvements. They were upset that the

council had not addressed the infrastructure issues but the borough council is not responsible for road work, the county council. The forum is currently an internet forum in which they are still pushing for infrastructure improvements. Mr. Dill also implemented a bike trial scheme that was run through a shopping unit in a local shopping center. They rented out both pedal and electric bikes for a month in hopes of customers eventually buying the bikes. Mr. Dill and his associates would invite people off the street and give them a free health assessment and explain the benefits to active transport. If interested they would provide a travel plan to help ease the transition from drive to walking/cycling. Mr. Dill believed this scheme was pretty successful, they sold more than a few bikes.

### *Swale*

In the Swale Borough Council, Climate and Ecological Emergency Project Officer Grace Couch has seen firsthand the disparity between cycling culture in smaller areas versus in large metropolitan cities (Personal communication, April 19, 2021). In her previous work in London, she observed how road closures, for example, had been implemented to make cycling, as well as walking and playing for children, safer in the streets. In Swale, however, similar moves were met with strong backlash from the public, and resulted in protests and property damage. Despite public opposition to these moves, Ms. Couch remained optimistic that a workplace bike share could gain traction in her borough. She pointed to the Kent-wide REV (Realising Electric Vans) scheme, run by the Kent County Council, as well as the Swale Borough Council's own goals of going carbon-neutral by 2030, as evidence that the borough, and the wider county, are thinking seriously about sustainability and the role sustainable transport plays in it.

### *CoMo Experiences*

CoMo is a nationwide organization that is focused around advancing the development of shared transport. Since their founding 21 years ago, they have been involved in helping to start up numerous car and bike shares. The Deputy Chief Executive of the organization, Antonia Roberts, discussed the different challenges that she and the group have seen over the years, as well as what strategies and tactics they have used to overcome them (Personal communication, April 26, 2021).

On the positive side, Ms. Roberts said that the CoMo user survey has shown that the satisfaction levels among those using bike shares are typically high, and that bike share schemes lower the bar for entry into cycling. Rather than purchasing and maintaining one's own bicycle, joining a bike share scheme may be attractive because the cost is low, there is no need to wear special cycling gear, there are well-documented physical and mental health benefits, especially during the COVID-19 pandemic, and it is convenient. Additionally, Ms. Roberts praised electric bikes for their ability to open up cycling to those who may have otherwise been deterred because of lack of confidence in their cycling abilities or health issues.

When asked why bike shares seemed to be more successful in larger cities such as London rather than smaller ones like Worcester, Ms. Roberts surmised that a scheme may be harder to justify in a smaller area because the market is much smaller. She also pointed out, however, that a scheme could be successful with sufficient commitment and appropriate investment in cycling infrastructure to support it. She suggested that making sure businesses and other organizations were involved was a key factor, but also that the right people, such as communications teams and upper management, were not only involved, but enthusiastic about it. She also stressed the importance of persistence and convenience as factors when trying to convince potential users to join the program, especially those who may show initial interest but never end up adopting the scheme.

### *The Halfords Perspective*

Halfords is the United Kingdom's biggest cycling retailer. They have 440 stores spread across the UK and Ireland, and they work closely with businesses to integrate cycling programs into their workplace. As Head of Commercial and Business Development Chris Oakley has been busy at Halfords in the wake of the pandemic, as businesses are charting their return to normalcy. In his time at Halfords, Mr. Oakley has seen cycling becoming more accessible to more people, thanks in part to the increased usage of electric bikes, which he said both make cycling easier and ease the perception that cycling is hard (Personal Communication, April 27, 2021). Additionally he has seen the market growing for cargo trailers, especially amongst businesses in city centers.



When asked what had made bike shares successful, Mr. Oakley attributed it to engagement with users, as well as providing options. He had found more success with bike shares at the public or university level, such as a program at the University of Bolton with 1000 bikes, rather than those at businesses, where usually only 5-10 bikes would be purchased.

### *Perspectives of the Worcester Business Improvement District*

The Worcester Business Improvement District (BID) is a non-profit organization that works with over 650 businesses to improve conditions in the city and support business growth. Sam McCarthy, the Projects and Marketing Manager for the Worcester BID, gave the team her views on the current status and prospective future of cycling in Worcester. Though she has noticed biking seems to have increased in the wake of the COVID-19 pandemic, Ms. McCarthy felt that currently Worcester is not a bike-friendly city, though she stressed that could change. She pointed to a high rate of bike thefts as a primary factor in this unfriendly climate. According to a recent government study, bike thefts in Worcester are the worst in the West Midlands region, with 328 for every 100,000 people in 2020 (Banner 2021). Ms. McCarthy also pointed to current Worcester city orders preventing “antisocial” behavior, which includes cycling, in the city center. However, she also added that the Worcester master plan, mapping out the city’s development over the next few years, includes sections on transport, and specifically, cycling, as part of the city’s work towards becoming emission free by 2030.

### *Woo Bikes and Other UK Cycling Organizations*

In order to more closely examine the Woo Bikes program and other local cycling organizations in the UK, the team interviewed those who were involved directly with these programs. These interviews helped the team gain a better understanding of the background of the initiatives and the barriers and successes the programs have had and continue to face. It was important to consider these factors as we thought about the feasibility of a program like Woo Bikes at local businesses in Worcester.

### *Other Local Cycling Organizations*

Peddle My Wheels is another local cycling organization that is promoting cycling in the UK. They are an organization based in London that aims to make cycling accessible and

affordable for everyone (Peddle My Wheels, n.d). They currently run two types of schemes through London Councils. The first is the sale of second-hand bikes. They buy bikes off the public to be cleaned and serviced and resold at their public bike markets. Alper Muduroglu, the founder of Peddle My Wheels, mentioned that they buy and sell lots of children's bikes because children grow out of bikes quickly and this program is a cheaper way to ensure children have a bike (personal communication, May 6, 2021). Their goal was to convince the parents to also get a bike but common excuses were safety on London streets, lack of time, and lack of confidence. The second scheme they run is Try Before You Bike and it allows people to try a bike for a time for a small monthly fee. Once the customer signs up online, Peddle My Wheels delivers the bike and all the accessories (lights, helmet, etc) to their home and they have access to free maintenance and a free cycle skills session. After the trial the customer can buy the bike, trial it for another month, or set up a time for Peddle My Wheels to collect the bike. Mr. Muduroglu stated that 40% of people return the bike. Out of those who did not buy the bike or continue their trial, a good portion found a different bike to ride. This organization is successfully encouraging people to bike more often.

### *The Woo Bikes Program*

The Woo Bikes program was established in 2012 and added electric bikes to the scheme in 2018 in order to encourage overall participation. The team interviewed Katy Boom, the founder and manager of the program at the University of Worcester to learn more about the overall history and development of the bike scheme. The team also interviewed (April 15th, 2021) Naomi Goldman, a former student coordinator of Woo Bikes as an undergraduate at the University of Worcester.

The Woo Bikes bike scheme began as a way to encourage students and staff to bike more and to reduce the University's overall carbon footprint. The program is accessible to both students and staff and has since expanded with the introduction of e-bikes that have rechargeable batteries with a 3-hour lifespan. As of today, the bike share has a fleet of 100 bikes, 50 being standard pedal bikes and the other 50 being electric bikes (e-bikes). A large portion of Woo Bikes users is noted to be international students, as cycling is more normalized in their cultures back home. Although the program has worked diligently to be as encouraging and accessible as possible, student and staff participation has been modest. Ms. Boom explained that even those

who participated in the regular “Have-A-Go” events on campus typically failed to follow through and participate in the scheme. Ms. Goldman explained that confidence and physical fitness are major factors that inhibit participation, which is why the implementation of e-bikes got more people interested in Woo Bikes. There is often a disconnect between behavioral intent and actual behavior, which was a problem also observed by the local authorities in Croydon and Reigate & Banstead. Woo Bikes have tried to recruit other Worcester employers in the bike scheme but these attempts have not proved fruitful. The scheme has had only limited success placing bikes with Spectrum and the city and county councils. One council social worker has been a regular participant, using a bike from the fleet in order to visit clients.

Although many of the students live between one and three miles between campus, the city of Worcester does not have a strong culture of cycling. Ms. Boom gave more insight to the city as a whole, explaining that Worcester is gridlocked, which is cause for long travel times and air pollution. The environment discourages people from changing their routine behavior, as many employees and students prefer driving to their destinations instead because it is just part of their routine. Ms. Goldman reiterated Ms. Boom’s point explaining how she does not believe Worcester to be a very “cycle friendly” city. Advertisements to participate in the program have even been sent through a staff paper, one of which incentivized cycling to work by giving those who participated a free breakfast. Unfortunately, only one person showed up to the breakfast, only exemplifying further the barrier in getting people to participate in the scheme.

These interviews emphasized the fact that exposure was and still is very important to a program like this one. Changing ingrained public behaviors is always difficult (e.g., see smoking) and typically requires concerted efforts over many years. There are many behavioral, institutional, political, and infrastructural barriers to overcome. Ultimately, these interviews gave the team an idea of what we might expect when trying to implement the Woo Bikes share to local Worcester businesses.

#### **4.2 Objective 2: Evaluating Employer Interest in Bike Share Pilot**

Our survey of employers in the city of Worcester revealed how a workplace bike share was received by various businesses and organizations in the area. We received complete surveys

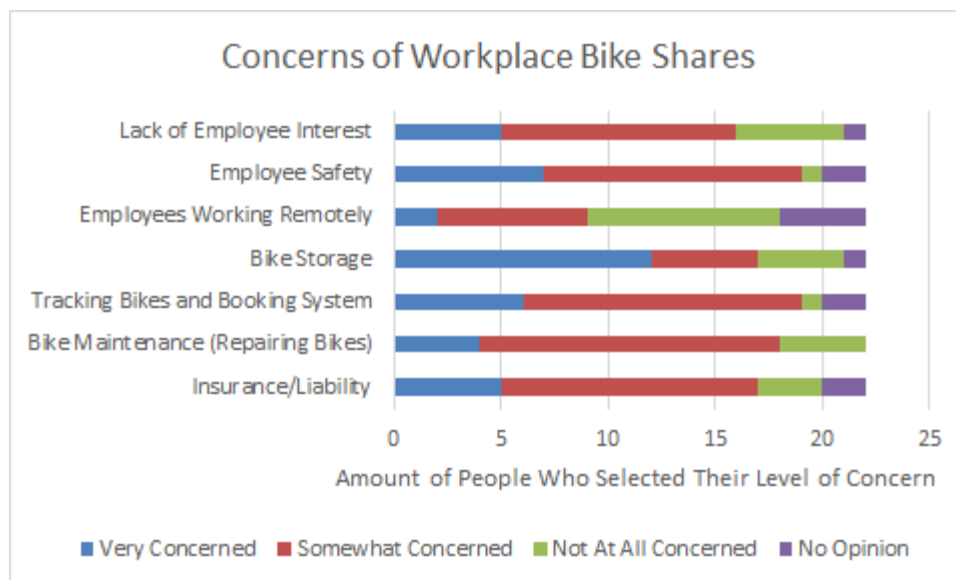
from 22 respondents. Sixteen of the 22 respondents gave the name of their business. The businesses that gave their names were as follows: One Creative Environments LTD, Brewers Arms, Amfortaf LTD, Crowngate Shopping Centre, Aquabio, The Zip Yard, Insert Audio Limited, and Platinum Property Agents. Nine of those 16 respondents worked for One Creative Environments LTD specifically. This question was important for us because we know that we received responses from a variety of business types that likely have differing perspectives on cycling. This information was also critical to us because we reached out to a few of these businesses as well for possible interviews to follow up and discuss further their thoughts on workplace bikeshares. We received responses, but unfortunately all the businesses declined to do an interview with us for various reasons.

Among the 13 individual companies responding<sup>2</sup>, nine had 1-24 employees, five had 25-74 employees, and two had more than 75 employees. We found that 73% of businesses had at least one person that regularly cycled to work and one company with 25-74 employees estimated that 10 employees regularly cycled to work. Also, interestingly, 46% of individual employees reported participating in the Cycle2Work scheme. This may indicate some selection bias among respondents, however. We suspect that those responding to the survey may be more likely to have an interest in cycling. All of the businesses surveyed strongly agreed or agreed that an employee bike share program is good for employee health, can reduce the carbon footprint, and can reduce the congestion within the city.

We asked all respondents to indicate their concerns about different aspects of a potential workplace bike share scheme, such as insurance, bike maintenance, and employee safety. Figure 19 shows that all aspects, except working remotely, were of some concern to a majority of the respondents, but only a minority were very concerned. Bike storage appeared to be the one aspect that was very concerning to the most (12) respondents. These data points may indicate that the pilot bike share scheme will need to be careful to explain how the University and the City are planning to address these concerns in order to encourage buy-in from employers and employees.

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<sup>2</sup> Since nine respondents from One Creative answered the survey, we excluded all but one in the data pertaining to companies as distinct from data pertaining to individuals.



*Figure 19: Levels of Concerns about Different Aspects of Workplace Bike Shares*

All 22 respondents indicated they would expect at least 3 employees in their organizations that would be willing to use a bike for work. Seventeen respondents said they would welcome the opportunity to use an electric bike for work-related trips in Worcester. There was also an even split of 11 yeses and 11 nos regarding the opportunity to use the cargo trailers with the electric bikes for business-related travel. This could be because there may not be a need for a cargo trailer for the job that they are doing. This could also be because people still prefer to use a pedal bike due to the fact that people have more control over a pedal bike than an electric bike, which makes them feel more comfortable using the pedal bike instead of the electric bike. Also from the survey, 17 of the employers surveyed said that they would be interested in having an electric cargo bike for employees to use for business trips within the city, but it was an even 11 yeses to 11 nos for the opportunity to use a cargo trailer that could detach and be used if needed. This may be due to the fact that companies may not need to use the cargo trailer for their specific business trips they may take. Seventeen employers indicating that they would be interested in using a cargo bike for business travel is important by itself, but having interest in the cargo trailers at all is a positive sign for interest too.

### **4.3 Objective 3: Evaluating Employee Interest and Concerns**

#### *Focus Group*

Our first and only focus group session was held at 6 PM BST on Wednesday, May 5th, 2021, with four of five prospective participants attending. We had planned for a second session at 1 PM BST on Friday, May 7th, 2021, however, none of our three interested respondents attended the session.

In our welcome activity, designed to get our participants comfortable with the Zoom format and the material, we asked the participants four simple questions: if they owned a bike, if they knew how to ride a bike, if they currently drive to work, and if they knew someone who bikes to work. All four participants knew how to ride a bike, but of them, only three currently owned one. Additionally, three of four participants knew someone who bikes to work, while half of the participants saying they currently drive to work, with the other two saying they only do it sometimes due to irregular work schedules or COVID-19 restrictions on going into their workplace.

Within the first activity, we asked our participants to imagine how their daily routine would change were they to start biking to work, as opposed to their usual transportation method. After splitting the group into two break out rooms for conversation on the topic, we reconvened and discussed their findings. In Room 1, the group discussed the impact that cycling would have on working parents, who may typically go from their workplace to pick up their child or to go shopping. The group felt that cycling to work would hinder the ability for them to perform these duties in succession. In the other room, the participants pointed out that, due to the lack of changing facilities at their workplace, they would have to rethink their routine of getting ready in the morning. They offered that if there were more changing and shower facilities in workplaces, then changing to a cycling commute may be more palatable, especially for women, who they suggested would be more affected by their absence than men.

After our team explained more about our project to the participants, we split into another breakout room, in which the participants were asked to consider one advantage and one disadvantage of cycling to work. Following discussion in the rooms, the teams again reconvened to explain what they came up with. From this debate, we concluded that advantages include low

cost, including savings on gyms and cars, environmental impact, health and fitness benefits, and a perceived comradery with other cyclists. Concerns or disadvantages included safety concerns, lack of proper cycle training, concerns about distance from the workplace, arriving to work sweaty, and impact on time management. Navigation of the roads around cars and potholes was also brought up as a concern, as was a lack of proper infrastructure, including parking and places to store bikes to prevent theft.

Our final discussion question concerned the culture of Worcester and whether or not the participants considered it to be a “bike-friendly” city. Unlike previous activities, the final activity took place entirely in the main Zoom room, in order to encourage a wider discussion amongst the participants. From this discussion, our participants primarily came to the consensus that while Worcester is not currently a cycle-friendly city, it does have the potential to be. One participant pointed out that it is a small and compact city, while another claimed the city was relatively flat, however all participants agreed that the climate in the city is not right for cycling currently. A participant pointed out that there is no enthusiasm for cycling, with no parking or signs, and even outright hate for cycling in newspapers and social media. Other participants agreed, with one of them describing Worcester as a “city with the mentality of a village,” which the others thought was an apt description (focus group, May 5, 2021). One participant suggested that if there was national legislation, and an increase in electric car usage, then change might be possible, though another participant added that the culture in the city seems to have changed slightly since the city became a university town.



*Figure 20: Responses to Focus Group Polls*

At the end of our session, we polled the participants on two questions, in order to get their final feedback and thoughts on the project. With our first question, “do you think your company should participate in this program,” all of our participants answered yes, though one of them pointed out that the question may lead to some different answers if it was phrased instead with the word “would” instead. Our second question, “would you (as an individual) be interested in participating in this program,” was less successful, with only one participant answering yes, owing to uncertainty in their future working schedules given the ongoing COVID-19 pandemic.



## **Chapter 5: Conclusions and Recommendations**

Cycling has grown in popularity in several cities in the UK, especially London, over the past 15 years as a response to improved cycling infrastructure and growing concerns about climate change, vehicle emissions, and urban congestion. The COVID-19 pandemic has encouraged more people to cycle and the government has reported a 200% increase in people cycling on many weekends in 2020. Whether this trend continues after the pandemic remains an open question.

It is evident that cycling culture is very prominent in major cities in England like London that have invested heavily in cycling infrastructure, but cycling culture is much less prominent in smaller cities like Worcester that have not invested as much in cycling infrastructure or cycling promotion programs. Many local authorities have engaged in a variety of efforts to encourage cycling, including cycling proficiency programs in schools, council bike pools, and the provision of infrastructure such as bike paths, bike racks, and even the creation of low traffic neighborhoods. Many businesses participate in the national Cycle2Work scheme and some try to incentivize employees to cycle by providing employee bike pools. Unfortunately, the lessons learned from many of these efforts is that changing public attitudes and behavior is extremely difficult. Overcoming the institutional and behavior barriers to cycling requires persistent and consistent multi-pronged efforts in education, outreach, and enhanced infrastructure.

The Worcester City Council has adopted an aggressive set of targets for GHG emissions reduction and will be enacting transportation policies to achieve these targets. Among these plans is the promotion of cycling. The City of Worcester actually has a reasonably extensive set of bicycle paths and is planning to enhance connectivity with the new Kefax bridge in St. John's. Unfortunately, Worcester is perceived by many to be unfriendly to cyclists and relatively few people cycle regularly within the city, citing traffic and safety as a major concern. The City Council has received a grant from the Local Government Association (LGA) to develop a pilot bike share scheme for employers in collaboration with the Woo Bikes program at the University of Worcester. The City and the University hope that providing a convenient workplace bikeshare scheme will encourage employees to commute and/or conduct local business travel by bicycle and this in turn will encourage others to take up cycling also.

Our survey of employers reveals both the promise and pitfalls of the proposed pilot scheme. The lack of response to our survey, despite the best efforts of the University and the City Council to encourage participation, highlights the problem of getting attention. On the other hand, the list of nine companies expressing an interest in the program provides a base of potential participants from which to build. Similarly, the survey revealed that employees have concerns about aspects of the program, such as liability, insurance, and maintenance. These reflect concerns raised by employers elsewhere with regard to bike pool schemes. On the positive side, however, these concerns may be moot since Woo Bikes will handle the issues of insurance and maintenance in the pilot scheme. Once this is explained to employers, they may be more apt to participate in the pilot scheme.

The focus group gave us insight into what employees thought about a bike share scheme at their business and biking to work in general, although we were able to only conduct one session with four participants. Participants indicated that their commute might be more difficult if they have to deal with dropping off and picking up their kids at daycare before and after work. A few other participants said that their biggest challenge would be in their ability to get ready properly for work, as they believe they might not have the facilities or time to change at their business before they start their day. Participants indicated that biking to work would have environmental and health benefits, but they were concerned about safety and time management. The participants also pointed out that the lack of enthusiasm for cycling and cyclists in general poses a big barrier to biking in Worcester. However, the participants did agree that Worcester has the structure and potential to be generally cycle-friendly. They felt that the overall culture needs to change for the implementation of a bike share like Woo Bikes to work best.

Ms. Boom and Ms. Corral hope the pilot program will be successful and expand. While Ms. Boom emphasized that the University would continue to support the program on their campuses, her hope was that the program would be taken on by the city council and expanded into a city-wide scheme. Ms. Corral emphasized that the council will make future funding and expansion of the scheme contingent on the success of the pilot.

## *Recommendations*

Based on our findings, the team has several recommendations for both Woo Bikes and future project teams. We recommend that the University and the City follow up with the businesses that indicated in the survey they are interested in the scheme. We recommend also reaching out to local organizations such as the BID, Chamber of Commerce, and cycling advocacy groups to reach more employers. The University and the City should develop a set of marketing materials to explain the benefits of the Woo Bikes scheme. We also recommend that cycling champions are found throughout the community and businesses. Once a couple of businesses start to participate in the scheme, their experiences should be promoted and shared through several different ways including testimonials and social media.

We also recommend that Woo Bikes liaise with local organizations such as BID, Chamber of Commerce, and cycling advocacy groups to reach more employers. These organizations have networks of companies that they can communicate with to continue to introduce the scheme to employers and promote it. Sam McCarthy, Projects and Marketing Manager, Worcester Business Improvement District (BID), indicated that they would be willing to help Woo Bikes conduct a formal survey with their network of 600 plus businesses (personal communication, May 4, 2021). The same survey instrument or a modified version might be used. The Chamber of Commerce is a member-fed, nonprofit that works to support businesses of the area. The city of Worcester is a part of the Herefordshire and Worcestershire Chamber of Commerce and has a network of 1400 businesses (British Chamber of Commerce, n.d). Cycling advocacy groups, like Bike Worcester, might be willing to solicit support from their members. Bike Worcester members might be willing to serve as advocates or ‘champions’ for the scheme within local businesses.

The team suggests that Woo Bikes develop marketing materials that outline their specific role in the program. These materials should explain the benefits of being a part of this program. For example, the financial benefits from reduced travel costs, the reduced travel times for short distances, and the health benefits of employees. The materials should also include how the University of Worcester will negate a few of the institutional barriers that are a part of pool bike schemes. In our research, we learned that initial costs, maintenance, and liability are common institutional barriers to business pool bike schemes. In the survey, employers indicated that they

were concerned with both maintenance and liability. The marketing materials would need to compare the costs for the program versus if the company invested in a pool bike scheme for themselves to explain the membership fee. For the Woo Bikes scheme, maintenance is handled by the university. This should be explained in the materials to ease employers concerns about having to handle that aspect of the scheme. The general steps maintenance should be included so that employers are not concerned that acquiring it will be a hassle. The marketing materials should also include a section on how liability works. They have indicated they are concerned and those should be addressed. By addressing these barriers and providing evidence that the scheme is beneficial to the business, employers will be more willing to participate in the Woo Bikes scheme.

We also recommend identifying cycling champions within the community and at individual businesses. A cycling champion is someone who advocates for cycling and encourages other people to cycle. These are the people who create interest because of their enthusiasm for cycling. By identifying these people within the community, Woo Bikes can use their excitement and experiences to encourage others around them to bike as well. After a few businesses agree to participate, they are transformed into business cycling champions. Their experiences should be gathered and used to promote the program through testimonials, social media, and other means. By sharing these good experiences, businesses may be more willing to give Woo Bikes a try.

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## **Appendix A: Interview Questions for Employers**

### Preamble:

We are students from Worcester Polytechnic Institute in Massachusetts. We are collaborating on a bike share scheme, Woo Bikes, with the University of Worcester and the City Council. We are grateful that you have taken the time to answer some of our questions. Your participation in this interview is voluntary and you may leave or skip questions at any time. We will use the information collected from this interview in our final report and for research purposes. If we use any information from this interview, we will give you an opportunity to review our materials before we publish. May we record this interview?

Can you speak to what your company does and your role there?

What are your thoughts on bike shares/bike pools?

Do you think a bike share/bike pool would work in this area or at some of the businesses in this district? Why or why not?

Do you know of anyone who bikes at your company currently?

Do you know of any businesses that partake in a bike share?

Do you think employees at your company would utilize a bike share scheme in order to commute to work or conduct business meetings with?

Thoughts on cargo attachment on a bike?

Do you think Worcester is a bike friendly city?

What are some barriers or assets?

Have you seen an increase or decrease in biking over time? Maybe after COVID?

Can we send you a link to our survey?

Do you have any final thoughts or advice for us?

## **Appendix B: A Survey to Understand Potential Relations Between Businesses and Bike Shares**

### Preamble:

We are students from Worcester Polytechnic Institute in Massachusetts. We are collaborating with the University of Worcester and the City Council on a pilot project to expand an e-bike share scheme with employers in Worcester

In 2018, the University added 50 electric bikes (e-bikes) to its long-running pedal bike share initiative, Woo Bikes. When launched, it was one of the Country's largest city-wide e-bike share schemes. Originally piloted by the University for staff and students, it has since expanded to include several local businesses and organisations, including Platform Housing Group, Worcestershire County Cricket Club, and Worcester City and Worcestershire County councils.

Recently, the Worcester City Council and the University of Worcester were awarded a grant through the Net Zero Innovation Fund to scale up the scheme. Woo Bikes is therefore looking for more Worcester businesses, in particular those where employees are still doing numerous short trips around the City, to trial a workplace e-bike sharing scheme between May and August with a view to a potentially permanent arrangement.

As part of this process, we are conducting a survey to identify employer opinions about bike sharing schemes. This survey will take around 5 minutes to complete and should be completed by a manager or someone of authority. This survey is completely anonymous (unless you choose to identify the company or organisation you work for or with) and the data collected will be used for research purposes. This survey is voluntary and you may skip any questions you do not wish to answer.

Whilst your data is anonymous it will be managed and processed in accordance with applicable legislation including the Data Protection Act 1998 (DPA) and the General Data Protection Regulations (GDPR). Data will be held for up to 15 years. For the purposes of data protection legislation the University of Worcester is the Data Controller. The University's Data Protection Officer is the Head of Information Assurance [infoassurance@worc.ac.uk](mailto:infoassurance@worc.ac.uk) .

First we would like to ask a few questions about your organisation.

1. What is your title/role at your organisation?
  - a. Owner
  - b. Manager
  - c. Other (Please Specify):
2. Are you willing to identify your company?
  - a. Yes: \_\_\_\_\_
  - b. No
3. If you answered no, is the organisation you represent part of the private, public, or third sector?
  - a. Private Sector
  - b. Public Sector
  - c. Third Sector
4. If you answered question 2 no, please indicate what type of organisation you represent :
  - a. Retail
  - b. Manufacturing
  - c. Services (please specify, e.g., education, health, finance, etc.):
  - d. Other (please specify):
5. How many locations does your organisation have in Worcester? (Please also indicate postcodes)
  - a. 1 (\_\_\_\_\_ Post Code):
  - b. 2 (\_\_\_\_\_ Post Code(s)):
  - c. More than 2 (\_\_\_\_\_ Post Code(s)):
6. Approximately, how many people are employed at your organisation?
  - a. 1 - 24 people
  - b. 25 - 74 people
  - c. 75 - 250 people
  - d. 250 + people

In this next section, we would like to ask some questions about your employee's use of bicycles for commuting and business travel. Please answer to the best of your ability:

1. Before the pandemic, approximately how many of your employees, if any, regularly commuted to work by cycling?
2. Before the pandemic, approximately how many of your employees, if any, regularly used bicycles for business-related travel within Worcester?
3. Does your organisation encourage employees to cycle to work?
  - a. Yes
  - b. No
4. Please explain why or why not:

5. Which of the following does your organisation provide at work for employees (please check all that apply):
  - a. Bike racks
  - b. Bike lockers
  - c. Other secure storage area for bikes
  - d. Lockers for employee clothing
  - e. Showers
  
6. Does your organisation have a Cycle2Work scheme?
  - a. Yes
  - b. No
  - c. Don't Know
  
7. Please indicate which three factors you think are most likely to discourage employees from cycling to work:
  - a. Commute is too long
  - b. Most employees work remotely
  - c. Road safety concerns
  - d. Bike safety concerns
  - e. Inclement weather
  - f. Need cycle training
  - g. Too unfit or /out of shape to cycle
  - h. Need car for business trips during day
  - i. Other (please specify):
  
8. Do you think more employees would be willing to cycle to work or around the city for business purposes if they had access to an e-bike?
  
9. Do you think more employees would be willing to cycle to work or around the city for business purposes after the pandemic?

The University of Worcester, in partnership with the Worcester City Council are piloting a bike share and are interested in gauging potential participation from area employers.

1. How many of your employees do you think might be interested in participating?
1. Would your company be interested in getting an electric cargo bike for employees to use for business trips within the City?
  - a. Yes
  - b. No

2. Woo Bikes also has trailers that can be easily detached to transfer materials/supplies to and from premises (see photo) Would you be interested in a detachable trailer (capacity 60 litres) for an electric bike?
- Yes
  - No
3. In deciding whether to participate, please indicate how concerned you are about the following out of 1 (very concerned) to 5 (not at all concerned).
- Insurance/liability  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
  - Bike Maintenance (Repairing the Bikes)  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
  - Tracking bikes and booking system  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
  - Bike storage  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
  - Employees mostly work remotely  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
  - Employee safety  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
  - Lack of employee interest  
 1-----2-----3-----4-----5  
 Very Concerned Not at all concerned
4. Please indicate how strongly you agree with the following statements on a scale of 1 (greatest interest) to 5 (least interest).

An employee bike share scheme...

- a. ...is good for employee health  
1-----2-----3-----4-----5  
Strongly Do not  
Agree Agree
- b. ...can reduce carbon footprint  
1-----2-----3-----4-----5  
Strongly Do not  
Agree Agree
- c. ...can reduce congestion in the city  
1-----2-----3-----4-----5  
Strongly Do not  
Agree Agree
- d. ...can reduce business trip travel time  
1-----2-----3-----4-----5  
Strongly Do not  
Agree Agree

If you are interested in the Woo Bikes pilot programme please contact:

Katy Boom

[k.boom@worc.ac.uk](mailto:k.boom@worc.ac.uk)

If you are willing to participate in a follow-up interview please contact:

Woo Bikes Team

[gr-WOO21-Bikes@wpi.edu](mailto:gr-WOO21-Bikes@wpi.edu)

Thank you for participating in our survey! Your input is really valuable to our research and we appreciate you taking the time to answer these questions. Enjoy the rest of your day!

Sincerely,

The Woo Bike Team

## Appendix C: Interview Script for Cycling Organizations

### Preamble:

We are students from Worcester Polytechnic Institute in Massachusetts. We are collaborating on a bike share scheme, Woo Bikes, with the University of Worcester and the City Council. We are grateful that you have taken the time to answer some of our questions. We will use the information collected from this interview in our final report and for research purposes. If we use any information from this interview, we will give you an opportunity to review our materials before we publish. May we record this interview?

Give a little background on our project

Can you speak a bit as to what your organization does and what your role is?

What does the program at Halfords look like?

What does your organization want to achieve?

How is it going?

What are your thoughts on e-bikes?

Do you think their accessibility makes biking more appealing?

Thoughts on cargo attachment?

What was some feedback (positive or negative) that you got/heard about your cycling programs?

What qualities in bike shares have you seen make them successful?

Unsuccessful?

How do you think COVID has affected people's thoughts on biking?



We have observed a disconnect between the amount of people that say they would be interested and the amount of people who actually participate, has your organization seen this problem?

What do you think causes this?

Do you have any idea on how to bridge the gap?

What has worked/ what hasn't for bike shares you have been a part of? Why?

What improvements could be made?

Do you have any advice for setting up this program at another company?

Do you know of any workplace bike shares?

Do you have any ideas of how this could work?

Do you have any final thoughts or advice for us?

**Appendix D: Interview Questions for CoMo**

Can you speak a bit as to what CoMo does and your role there?

How does CoMo promote biking?

Can you talk about CoMo's "Public Bike Share" initiative?

What have you done to promote it?

What was some feedback (positive or negative) that you got/heard about the program?

What qualities in bike shares have you seen make them successful?

Unsuccessful?

What are your thoughts on e-bikes?

Do you think their accessibility makes biking more appealing?

Thoughts on cargo attachment?

Why do you think bike shares work better in London than places like Worcester?

How does CoMo promote their surveys for their key findings piece of your survey?

Do you know of any workplace bike shares?

Do you have any ideas of how this could work?

## **Appendix E: Sample Interview Questions for Council Members**

What was your former role on the Council?

We understand that you have been responsible for a variety of programs and initiatives to encourage cycling in Reigate, could you tell us more about those initiatives?

What strategies have you used to encourage biking?

What things failed/worked?

Why?

Why was the program set up this way?

How do you think this program could be rolled out to employers?

What were the benefits of the program?

Do you know of any workplace bike shares in Reigate?

How did they work?

What types of companies participated in those bike shares?

**Appendix F: Interview Questions for Naomi Goldman**

Would we be able to record this meeting?

Can you speak to your experiences as Woo Bikes coordinator?

What were some barriers to students participating in the bike share do you think?

What was some feedback (positive or negative) that you got/heard about the program?

What were some ways that you found that got people interested in taking up modes of public transportation, specifically biking?

What are some things you think could be improved in the program?

What are your thoughts about the e-bikes vs pedal bikes?

Are people more apt to use an e-bike vs a pedal bike when deciding to ride them?

We have observed a disconnect between the amount of people that say they would be interested and the amount of people who actually participate, would you say Woo Bikes also faces this problem?

What do you think causes this?

Do you have any idea on how to bridge the gap?

Any ideas on how to get employees/ employees at UW interested in the scheme?

## **Appendix G: Interview Questions for Alper Muduroglu**

Can you speak to what Peddle My Wheels does and your role there?

We know you have a “Try Before You Bike” initiative, how many people actually follow through with buying the bike after testing it out?

Are there certain times of year where people tend to buy more bikes?

The Have-A-Go events at the University of Worcester let staff and students try out bikes but rarely anybody comes back to take part in the initiative. Have you found any disconnects like this at all and if so how do you work to entice more users?

What are your thoughts on bike shares/bike pools?

Do you think a bike share/bike pool would work in this area or at some of the businesses in this district? Why or why not?

Do you think employees would utilize a bike share scheme in order to commute to work or conduct business meetings with?

Thoughts on cargo attachment on a bike?

Why do you think bike shares work better in London than places like Worcester?

Do you know of any businesses that partake in a bike share?

Have you seen an increase or decrease in biking over time? Maybe after COVID?