



Improving the Worcester Economy Through Active Transportation



Improving the Worcester Economy Through Active Transportation

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ABSTRACT

Many cities face increasing traffic and poor air quality, largely due to heavy reliance on private vehicles for short distance trips. The goal of this project was to promote biking and walking in the Worcester city centre, with the help of our sponsor, Bike Worcester. We analysed patterns, barriers, transportation choices, and business owners' perceptions about customers' travel. Surveys of customers and business owners along with interviews were used to collect this data. The data showed a significant level of walking and driving to stores in the city centre. The team has five main recommendations: more bike lockers, free bike storage for businesses, better bike storage on public transport, offering transport/cargo bikes for shoppers, and that a strict passing law be put into place.

EXECUTIVE SUMMARY

Introduction

Active travel, defined as any form of transportation that involves physical activity such as walking or cycling, has become a key focus for governments and cities worldwide. Bike Worcester, a local advocacy group that aims to promote cycling for transport around Worcester, UK, is concerned about the heavy reliance on car use for retail and local business trips, and seeks insight into why people choose specific modes of transport. They are also interested in whether these choices align with business owners' perceptions. Bike Worcester is aiming to collect data that helps them promote active travel in the Worcester city centre. The goal of this project was to promote biking and walking in the Worcester city centre.

Background

Increasing active travel in urban areas can positively impact the environment, the community and local businesses, especially in busy city centres with larger populations. When cities prioritize motor vehicle transport an unintended result may be unsafe conditions for pedestrians and cyclists.

Active travel is greatly influenced by perceptions of safety and the state of surrounding environments. Important environmental factors include park benches, bike racks, street lights, environmental aesthetics, and the connectivity of walking or biking routes. Improving perceptions of safety and making the environment more welcoming and convenient for active travel can contribute to a shift away from unsustainable forms of transport.

While active travel presents challenges on a global scale, these issues are also evident at a local level, particularly in Worcester, UK. The city has significant barriers for cyclists when taking bikes on trains. Infrastructure issues throughout the city raise problems as well; these include lack of parking, bike racks, and benches. Safety is also an issue within the city; near misses happen often causing fewer people to want to use active travel. The city has recently started making infrastructure improvements to promote active travel within the city centre and the two main shopping centres known as Chapel and Friary Walk.

When looking at active travel in pedestrianized shopping districts, features can improve the overall experience for pedestrians and shoppers encouraging them to return to the shopping district. For example, benches and standing signboards increased foot traffic by making streets more comfortable and informative (Hahm et al., 2019; Xie et al., 2024). This then encourages people to come back to these areas thereby promoting active travel. However, some infrastructure factors discourage pedestrians in a shopping district. Streets shared with cars and pedestrians and narrow pedestrian-only streets cause a decrease in the number of pedestrians due to lack of space and safety concerns (Hahm et al., 2019).

By collecting and analysing active travel data, the project aims to identify barriers to active travel and develop practical, evidence-based recommendations that Bike Worcester can use to encourage a shift from car use toward walking and cycling. Ultimately, the project supports a vision of a more sustainable and liveable Worcester, where active travel becomes the intuitive choice for shopping trips.

Methods

The goal of this project was to promote biking and walking in the Worcester city centre. To achieve this goal, we identified five main objectives:

- Document walking and biking patterns of business and retail patrons in Worcester
- Analyse barriers to biking and walking to businesses
- Determine motives for transportation choices commonly used in Worcester
- Identify business owners' perceptions about how customers travel
- Draft materials for promoting biking and walking

We used specific methods for achieving each objective, such as surveys, interviews, and qualitative observation, built to assist effectively with each objective.

Results

The data shows that walking and biking make up a significant portion of the transportation to the city centre. The team received 202 responses to online and in-person surveys about current barriers that active travellers face when commuting to businesses in the city centre. Those responses disclosed that 23% reported carrying goods as the most influential factor on active travel. Additionally, there were smaller factors like safety, weather, travel time, cost, and distance. Walking is also shown to be heavily influenced by weather, while fewer people using the other modes of transportation listed weather as an influential factor. Distance followed the same trend as carrying goods, but with fewer participants saying it was an issue. A question about identifying the main cause of unsafe travel in Worcester revealed four big issues: motor vehicle traffic, lack of dedicated walking and cycling paths, poor path condition, and poor visibility due to lighting. The in-person survey results also showed that cycling and walking together are dominant forms of transport in the city centre at 57%. Cars still made up a significant share at 28%. Of those who reported using cars, 45% reported driving daily and 28% reported car trips of less than 10 minutes, indicating a significant portion of car trips that could be replaced with biking trips. We believe those taking cars could switch to bikes, but don't due to concerns about paths and motor vehicle traffic.

The findings from in person semi-structured interviews reinforced survey data and also brought new perspectives on the barriers to active travel in Worcester. The team conducted two interviews with Bike Worcester leadership and one business owner. All interviewers mentioned how there used to be a secure bike storage area within Friary Walk, which made a noticeable increase in biking. Bike Worcester members also reported that not being able to bring bikes on buses in Worcester is a significant issue since the current bus infrastructure does not support traveling with a bike. Another recurring issue the Bike Worcester members mentioned is the number of near misses cyclists experience. The members go on to note that they believe a majority of near misses occur at intersections. They note that the reason cyclists have to be in these intersections is because of the lack of connected bike paths.

The team collected survey responses from business owners through the Worcester Business Improvement District email list. The survey data showed that 11 of the 13 owners

reported their customers drive to their establishments. A list of other noteworthy questions and responses follows:

- Do customers' transportation choices affect sales?
 - Lack of parking negatively affects store traffic
 - The inconvenience of parking due to cost affects their sales
- Does poor weather affect sales?
 - Half noted no changes due to their customers having pre-booked appointments.
 - The other 50% noted a decrease in sales with poor weather and an increase in sales during nice weather
- Do customers have concerns about walking or biking to local businesses?
 - The main issue was bike theft
 - Safety concerns for the cyclists

When analysing the quantitative and qualitative data from the business owners in comparison with the survey data collected, the main commonality found was that bike theft is a major concern for both owners and the general public. As for the differences, the majority of business owners agreed that the primary mode of transportation used by their customers is driving, while our general survey determined that walking is the preferred mode of transportation to businesses in the city centre. Also, the in-person and social media surveys determined that carrying goods and weather were the largest influence on transportation choices to businesses. However, only half of the owners surveyed expressed that poor weather affects their sales. These findings were confirmed when conducting an interview with a local business owner selling eco-friendly goods.

To translate our research and findings into a format suitable for public advocacy, the team produced a comprehensive visualisation toolkit. This deliverable is the primary bridge between the raw data collection and actionable stakeholder engagement.

Finally, we provided Bike Worcester with the installation of the Telraam traffic counter, in the window of a vacant unit above Chapel Walk, facing High Street. The Telraam counts the vehicles, pedestrians, and cyclists that pass through the area and keeps track of the direction. The data collected can help Bike Worcester support improvements for pedestrians and cyclists.

Recommendations

The following recommendations were presented as suggestions for Worcester City Council, Worcestershire County Council, the federal government, local bus companies, and Bike Worcester.

1. Worcester City Council should install more bike lockers
2. City Council should offer free bike racks to city centre businesses
3. The bus companies should add storage for bikes inside the buses with the support of the County Council
4. The City Council should make transport/cargo bikes available to the public
5. The City and County Councils should make a law that requires drivers to give a minimum of 1.5 meters of space when passing a cyclist or walker

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- The team's instructor, **Professor Caitlin Neer**, for guiding preparation before arrival in Worcester
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- The Worcester Business Improvement District Business Support Coordinator, **Crystal Thompson**, for providing us with a means of distributing our surveys and interviews
- The Manager of Crowngate Shopping Centre, **Michael Lloyd**, for distributing our surveys to customers and business owners, providing footfall data, and providing a location for the Telraam traffic counter
- Business owners, for advertising our surveys to customers
- All those who responded to our surveys

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1. INTRODUCTION

Active travel, defined as any form of transportation that involves physical activity such as walking or cycling, has become a key focus for governments and cities worldwide. This shift is largely driven by growing concerns over urban congestion, rising carbon emissions, and declining public health. Many cities face increasing traffic levels and poor air quality, largely due to heavy reliance on private vehicles for short distance trips. As a result, encouraging more sustainable and active modes of transportation has become an important strategy to address these interconnected environmental and health challenges.

Cities around the world have begun investing in infrastructure such as dedicated cycling lanes, pedestrian friendly streets, and integrated walking and cycling networks. These initiatives aim not only to reduce congestion and emissions but also to improve quality of life. Active travel has been shown to increase physical activity levels, contributing to improved cardiovascular health (Dinu et al., 2019), while also delivering broader social, economic, and environmental benefits (Fast et al., 2025; Ding et al., 2024). For example, reduced traffic can lower noise and air pollution, while increased foot traffic can support local businesses and create more liveable urban environments.

In the UK, places like Manchester, Glasgow, and Bristol have had great success shifting travel in vehicles to cycling and walking (McCartney et al., 2012; Maternini, 2017). Worcester's city centre serves as the main destination, attracting customers to retail, cafe, dining, pubs, and entertainment. The way people travel to the city centre plays an important role in shaping Worcester's urban sustainability, congestion, economy, and pollution (Worcestershire County Council & Worcester City Council, 2023). Given the importance of travel behaviour in this area, local organisations have taken an active role in encouraging more sustainable transport choices. One of these organisations is the project sponsor Bike Worcester.

Bike Worcester, is an advocacy group working to make cycling a preferred mode of transport while promoting healthier lifestyles. The group hosts training clinics, events, and sells used bikes at affordable prices (Bike Worcester). Bike Worcester is concerned about the heavy reliance on car use for retail and local business trips, and seeks insight into why people choose

specific modes of transport. They are also interested in whether these choices align with business owners' perceptions. Bike Worcester is aiming to collect data that helps them promote active travel in the Worcester city centre.

The goal of this project was to promote biking and walking in the Worcester city centre. To achieve our goal, we identified five main objectives: document and analyse the walking and biking patterns in the city centre, determine modes of transportation commonly used, analyse barriers and potential strategies to support biking and walking, identify business owners' perceptions about how customers travel, and draft recommendations for promoting biking and walking in Worcester.

2. BACKGROUND

Increasing active travel in urban areas can positively impact the environment, the community and local businesses, especially in busy city centres with larger populations. When cities prioritize motor vehicle transport an unintended result may be unsafe conditions for pedestrians and cyclists. Promoting active travel can reduce carbon emissions, improve public health, and make the city environment safer for everyone. In this chapter, the team examines the factors influencing travellers' transportation choices, the impacts on local commerce, and strategies that cities use to encourage walking and biking.

2.1 What is Active Travel

Active travel is defined as transportation modes that primarily involve a minimal level of physical activity. Although the focus of this study is on walking and cycling, active travel also accounts for trips made by e-bikes, scooters, wheelchairs and mobility scooters (Travelling by Bike, Walking and Wheeling, n.d.). These forms of travel are alternatives to motor vehicle use and are especially suitable for short trips such as shopping and errands within urban areas. Beyond serving as a mode of transportation, active travel has a positive impact on factors such as public health, environmental sustainability, overall urban functionality, quality of life, and economic efficiency.

2.1.1 Benefits for individuals

For individuals, walking and biking offers financial, physical, and cognitive advantages that make them attractive alternatives to driving for short-distance retail and local business trips. Walking and biking increase daily physical activity, which contributes to improved cardiovascular health, weight management, and reduced risk of chronic diseases as shown in Figure 1 (Dinu et al., 2019). Incorporating movement and physical activity into daily routine trips, such as shopping, allows individuals to gain mental and physical health benefits without dedicating additional time specifically for exercise (Celis-Morales et al., 2017; Martin et al., 2014; Ding et al., 2024).

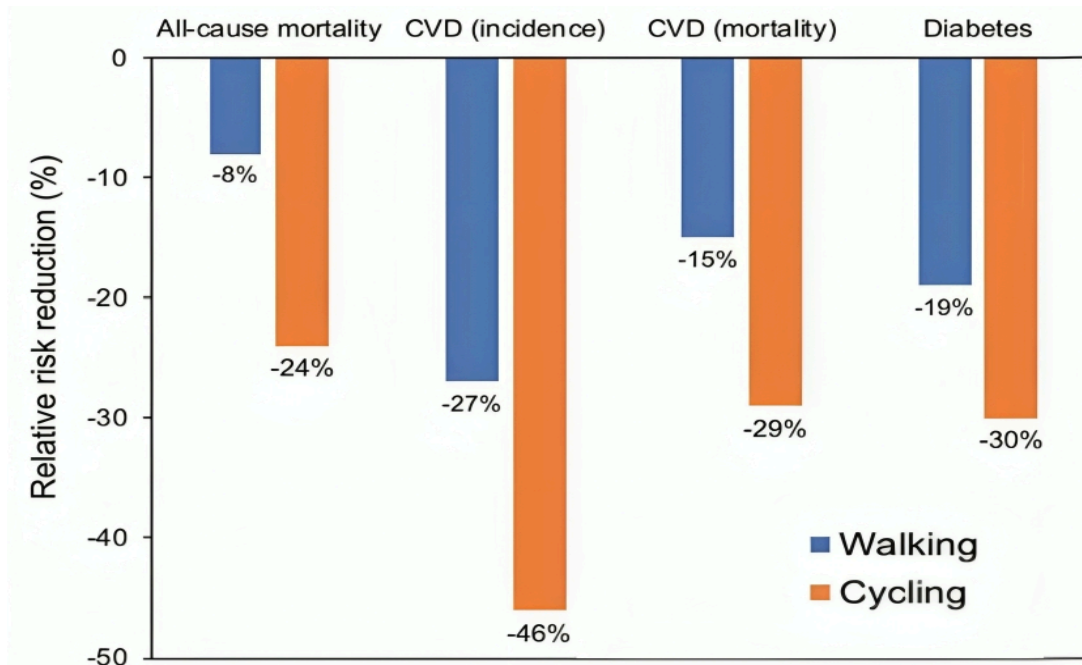


Figure 1: Reduced risk of several chronic diseases depending on mode of active transportation
(Dinu et al., 2019)

Active travel can also be financially advantageous, as driving involves high costs, including vehicle purchase, insurance, fuel, maintenance, and parking fees. According to a study done in the US, these expenses add up over time, making car ownership a major financial responsibility, accounting for more than 18 percent of a typical household's income (Walkinginfo.Org: Economic Benefits, n.d.). Walking is essentially free, and cycling involves relatively low long-term costs once equipment is purchased, remaining significantly cheaper than car ownership. Despite these costs, travellers increasingly depend on car use, due to perceived convenience increasing dependency on car use even when more affordable alternatives exist (Gössling et al., 2022).

2.1.2 Cities benefit from people using active travel

Private vehicle use contributes to environmental issues that harm climate stability, water quality, and public health. Shifting shopping and business trips to walking and cycling reduces emissions at their source and leads to improvements in congestion, public health, and environmental quality (Mueller et al., 2015).

Motor vehicle use contributes to noise pollution while fewer cars on the road leads to lower noise levels, creating a more pleasant city centre. Walkers and cyclists can avoid many of the delays associated with car congestion, and they can navigate more directly through pedestrianized streets and designated paths. For short trips, active travel can therefore be both time-efficient and less stressful than driving (Marquette et al., 2021).

2.1.3 Disadvantages of Active Travel

Active travel has many benefits for society and the environment, but the implementation of active travel measures can come at a cost to driving infrastructure. For example, measures for making roads safer for cyclists may include lowering the speeds of car traffic, decreasing the capacity for car traffic, and decreasing the amount of car parking (Schneider, 2013; Arancibia et al., 2019). While adding cycling lanes and reducing speed limits can lower traffic speeds, the impact is relatively small for drivers. For example, in simulated test cases in a Melbourne, Australia suburb, these changes resulted in a reduction of only 0.95 to 1.53 km/h, indicating that although travel times for cars may increase with the addition of bike lanes the effect is not very significant (Nanayakkara et al., 2022). Thus, implementing accommodations for active travel may come with lower speeds on streets but, for short distances, these do not have a large impact on travel time. Weather also presents problems related to the desirability and practicality of cycling. For example, Meng et al. (2016) found that cyclists preferred dry weather with lower temperature and humidity. So adopting active travel methods can have small negative impacts on car traffic speed and may be less comfortable than car travel.

2.2 Factors of Active Travel Engagement

Active travel is greatly influenced by perceptions of safety and the state of surrounding environments. Important environmental factors include park benches, bike racks, street lights, environmental aesthetics, and the connectivity of walking or biking routes. Improving perceptions of safety and making the environment more welcoming and convenient for active travel can contribute to a shift away from unsustainable forms of transport.

2.2.1 Public Transportation

Public transportation systems can play a significant role in supporting active travel by integrating with walking and cycling networks. Places like the United States of America and New Zealand have made front-mounted racks on buses routine, allowing full sized bikes on buses. However, riders in Great Britain, Ireland, and much of continental Europe still rely primarily on folding bicycles because most buses do not allow full sized bikes (Mixing Cycling and Bus Travel, What Travellers Can Expect in Different Countries, 2025). In Worcester, Massachusetts, buses are equipped with full sized bike racks on the front of each bus that can accommodate two traditional bikes as seen in Figure 2 (Biking Resources | City of Worcester, n.d.). Accommodations like these create a lower barrier to entry for those considering whether to cycle.



Figure 2: Worcester, Massachusetts, USA public bus (Tom Marino, 2023)

2.2.2 Infrastructure

Implementing dedicated infrastructure for active travellers is a standard strategy for encouraging active travel, but there are some barriers that complicate implementation of these strategies. Political concerns can prevent the implementation of these plans and factors like weather, safety, and cost influence use of this infrastructure.

Access to designated paths is a key factor that impacts a person's willingness to walk or cycle. Active daylight hours are a major component of path usability, and a lack of lighting on city streets, sidewalks, and bike paths could be limiting active travel (Timetric, 2016).

Management of city parking affects how people choose to travel. When there is an excess of available parking, people are less likely to choose alternate travel options, such as public transport or cycling and walking. This increases reliance on personal vehicles, which in turn leads to greater congestion (Marquette et al., 2021). The over-accessibility of driving also results in an increase in parked cars, which degrade safety for walking and cycling.

Amenities like bike parking and benches are essential for creating a welcoming and convenient experience for active transport. The availability of bike parking influences cycling decisions for current and potential cyclists, with higher quality and more accessible bike parking associated with more bicycle use (Heinen & Buehler, 2019). People may be discouraged from cycling to certain areas if there are not easily accessible places to store their bikes. For walkers, benches are a welcoming addition to walkways because they provide a place to rest. Other elements that can help create a welcoming atmosphere include greenery, street lights, and decorations and all can promote walking on downtown city streets (Davies, 2018).

2.2.3 Safety

Safety is a central factor influencing active travel choices. Across many cities, concerns about theft, traffic exposure, personal security, and infrastructure quality discourage both cycling and walking. Studies have indicated that bicycle theft significantly impacts ridership behaviour. According to Cohen et al. (2024), 45% of respondents reported that they had reduced or stopped biking after experiencing theft, while only 6% reported increasing their bicycling. Additionally, 40% shifted to less sustainable modes of transportation for trips previously made by bicycle. These findings suggest that bike theft has a major impact on whether people choose to engage in active travel.

Street parking also presents safety concerns for active travellers. Parked cars reduce visibility for walkers and cyclists making roads less safe. Car doors could also be opened into a cyclist path which can cause that cyclist to crash or ride into oncoming traffic. Most importantly, street parking forces cyclists into the road, increasing the risk of close passes and accidents with motor vehicles. Overall, street parking presents risks for active travellers and takes up space that could instead be used for dedicated bike lanes.

Near misses between pedestrians, cyclists, and motor vehicles further contribute to safety concerns, shaping public perception even when collisions do not occur. The average cycling speed is 8mph or less which has been found to be three times more likely to experience a near miss than someone traveling 12mph (The Near Miss Project, 2015). “Researchers suggested that faster cyclists may be treated with more respect by drivers and subjected to fewer overtaking manoeuvres” (“Slow Cyclists More Likely to Be Involved in a Collision,” 2016). Figure 3 shows the mean of near misses per mile based on the cyclist's speed, which reinforces the idea that the average cyclist who bikes 8mph or less experiences more near misses. Data like this discourages people from commuting by bike because of the fear of experiencing a near miss or being hit.

Near Misses Per Mile Based on the Cyclist's Speed

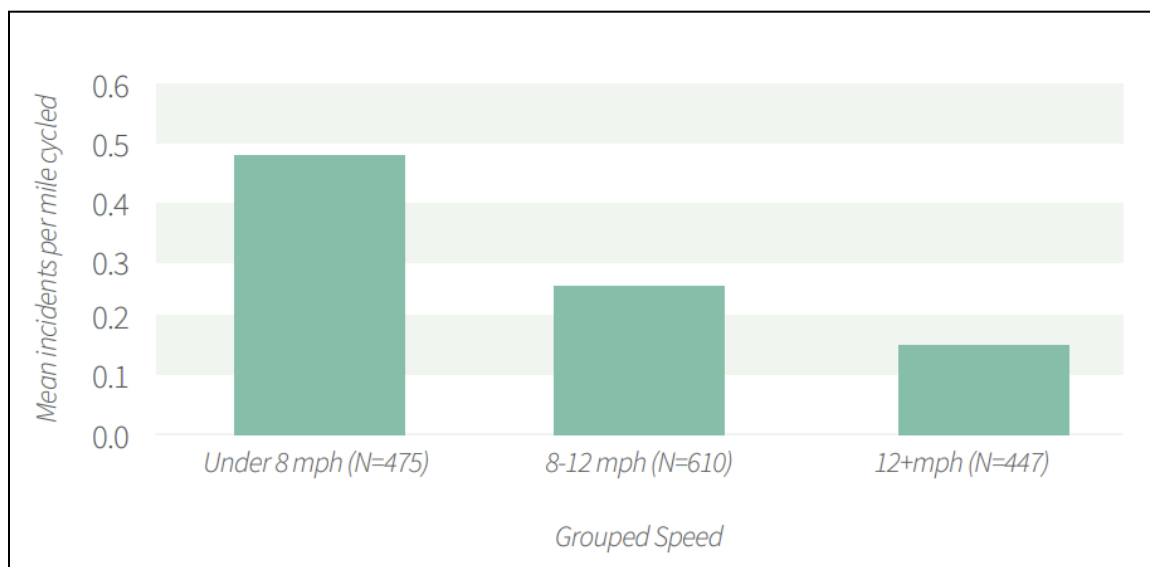


Figure 3: Variation in mean incidents rates by grouped speed (Eriksson et al. 2019).

One reason for the high numbers of near misses in the UK is because there are no laws in place specifying distances required to pass a cyclist. In many countries the law states you must be 1.5 metres or 5 feet away from a cyclist when passing in a car. For example, the state of Maine in the US, has a 3-foot passing rule in place; not the full 5 feet, but it is still better than nothing like in the UK (Maine Gov; Bike Worcester). To keep bike commuters off roads and safe, many local governments in the United States have built dedicated bike paths (Fiol et al., 2022).

2.2.4 Cost

Although active travel offers numerous benefits, financial considerations are still one of the most influential factors in transportation choices. Both real and perceived costs affect whether individuals are willing to shift from driving to walking or cycling.

While cycling is cheaper than driving in the long term, the upfront cost of purchasing a bicycle, helmet, and other necessary equipment can be a barrier. Concerns over theft may deter bicycling for transportation, especially when it requires leaving bicycles at train or bus stations where secure parking is limited (Bonham & Koth, 2010). This may also increase the need for higher-quality locks or secure storage, which can add to the initial expenses. For individuals uncertain about committing to cycling, these upfront costs may be discouraging.

2.3 Shopping District with Pedestrianized Streets

When dealing with shopping districts, certain street features attract more pedestrians. For example, benches and standing signboards increased foot traffic by making streets more comfortable and informative (Hahm et al., 2019; Xie et al., 2024). Improved streetscapes such as well-maintained, wider, more connected, and central streets had the strongest positive effect on pedestrian volume. Making a shopping district more appealing with updated features can improve the overall experience for pedestrians and shoppers encouraging them to return to the shopping district.

However, some infrastructure and economic factors discourage pedestrians in a shopping district. Streets shared with cars and pedestrians and narrow pedestrian-only streets cause a decrease in the number of pedestrians due to lack of space and safety concerns (Hahm et al., 2019). Also, when pedestrian malls were created to save retail shops from going out of business in downtown areas, they failed due to the cities' overall economic standing (Amos, 2020). These examples demonstrate flaws within a city that should be considered when forming a shopping district.

By having clustered and diverse stores, cities can increase foot traffic for businesses and decrease the time spent traveling longer distances. Streets with many shops and high store diversity offer more browsing options and encourage lingering (Hahm et al., 2019; Xie et al.,

2024). A higher proportion of coffee shops and restaurants increased pedestrians' staying time because they are not limited by mealtime. When shopping districts have variety stores plus food and drinks, people have more of a reason to stay longer, encouraging more shopping.

In terms of a shopping mall's location, transportation access does not predict shopping activity. Distances to subway stations, bus stops, or parking lots do not significantly influence walking routes or shopping behaviour, so visitors tend to move quickly away from public transit and toward more attractive central streets (Hahm et al., 2019; Xie et al., 2024). The quality of the shopping district, once a person is there, is more influential than their travels in getting to the shopping district. Driving and public transportation do not appear to interfere with pedestrian shopping behaviours.

Also, management and routine renovation were critical to the long-term success of a shopping district. Generally, when shopping districts are actively managed by local organizations, regularly renovated, and have regular events that keep the space lively, shopping districts thrive (Amos, 2020).

2.3.1 Benefits for the Environment

Pedestrianized shopping malls can have an impact on the surrounding area. Pedestrians' presence can enhance the environment near a shopping district. When people primarily walk or cycle in pedestrianized areas, there is a reduction in noise levels, the air quality is improved, and customers' shopping experience is boosted (Soni & Soni, 2016; Brownrigg-Gleeson et al., 2023; Hahm et al., 2019). Therefore, keeping shopping districts clean and making streets safer by restricting cars encourages more people to walk and bike because of their positive experiences.

2.3.2 Benefits for the Consumer

When looking specifically at the customers, shopping malls with pedestrianized streets allow customers to use their time effectively. A shopping district provides a wide range of business options in a small, concentrated area (Hahm et al., 2019; Yoshimura et al., 2022). So, a consumer can purchase everything they desire without the inconvenience of having to travel to multiple places, which saves time and money.

2.3.3 Benefits for the Business Owners

Business owners benefit from pedestrian shopping districts because they bring in more customers. People walking on streets in shopping districts are more likely to see businesses and store fronts, encouraging them to enter and purchase goods (Soni & Soni, 2016; Yoshimura et al., 2022; Torrens, 2022). There is also a direct correlation between the number of pedestrians in an area and the number of customers a business has (Soni & Soni, 2016; Hahm et al., 2019). People walking or cycling on streets boosts exposure of local businesses and peak pedestrians' interest, encouraging customers to go to local stores and establishments.

Also, pedestrianization and shopping districts make a positive contribution to a business's revenue and overall profit. They encourage people to support local businesses, increase sales, and open up new and better job positions (Soni & Soni, 2016; Volker & Handy, 2021; Yoshimura et al., 2022). With these factors boosting the community's economy, local businesses can see positive economic impacts through an increase in their sales and revenue.

2.3.4 Negative Concerns for the Business Owners

Even though there are many benefits to having a pedestrian shopping mall, there are some concerns and factors that can impact a business owner's sales. There is a preconceived notion that restricting car access will reduce accessibility to businesses and decrease the number of customers they receive (Yoshimura et al., 2022; Brownrigg-Gleeson et al., 2023). And business owners believe the number of pedestrians and cycles frequenting shops will not make up for the loss of sales from motorists (Volker & Handy, 2021). Business owners fear that with fewer people passing shop fronts due to accessibility reasons, businesses are missing out on sales made by certain demographics of shoppers.

It is true that, if car access is restricted, local automotive businesses may see a decrease in customers and sales. When people use their cars and other vehicles less, places "like auto parts or repair shops, gas stations, and large home-goods stores might experience stagnant or reduced sales" (Volker & Handy, 2021). For businesses not found in a shopping district, such as department or automotive stores, consumers could deem traveling to those places inconvenient, causing them to avoid those businesses.

2.4 Worcester Specific Content

While active travel presents challenges on a global scale, these issues are also evident at a local level, particularly in Worcester, UK. The city has significant barriers for bikers when using the bus system, and it also has major issues when taking bikes on trains. Infrastructure issues throughout the city raise problems as well like lack of parking, bike racks, and benches. Safety is also an issue within the city; near misses happen very often causing fewer people to want to use active travel. The city has recently started making improvements to promote active travel within the city centre and the two main shopping centres known as Chapel and Friary Walk.

2.4.1 Public Transportation in Worcester

Worcester, UK has significant barriers for bikers when using the bus system. It also has major issues when taking bikes on trains. In Worcester, UK, none of the buses are equipped with bike racks. According to an article published by Worcester News, two bus companies in Worcester County known as First Bus and Diamond Bus allow folding bikes if there is space but do not allow standard bikes. Diamond Bus requires folding bikes to be in a bag or box which many riders find more inconvenient but better than nothing. One of the more rural bus services, LMS Travel, offers full size bike storage if space permits and the driver approves it (Looking at Ways to Improve the Bike-and-Bus Combination to Travel around Worcester, 2022). LMS Travel offers more flexible options with bikes but is a smaller operation with fewer stops.

Figures 4 and 5 are pictures taken of bike storage on local Worcester regional trains. Lack of bike storage on board trains poses a problem for bikers looking to use trains because the lack of storage space could result in damage to their bikes. According to a Bike Worcester member, the reason for less space for bikes on trains is due to the new train cars being produced with more seating and no designated space for bikes. Due to the increase in profit from more seating, these new cars are becoming the standard (Bike Worcester). This may be discouraging for those looking to use active transport because they will not be able to rely on this form of transportation.



Figure 4: Great Western Railways (Bike Worcester)



Figure 5: West Midlands Railways (Bike Worcester)

2.4.2 Worcester's Infrastructure

Worcester includes various areas with street parking that contribute to safety risks for active travellers. With road space still heavily allocated towards parked vehicles, car use is incentivized and congestion is increased (Worcestershire County Council, 2016). Worcester's 2024 revisions of existing Traffic Regulation Orders (TROs), which govern how road space is used, often prioritize car parking over active travel (Bike Worcester, 2024). Reviewing and revising existing TROs to further disincentivize car-dependent trips could help to promote more active travel.

2.4.3 Worcester City Centre

As discussed in 2.2.2, amenities like bike parking and benches are essential for creating a welcoming and convenient experience for active transport. Worcester currently includes bike racks and benches in various locations, including some covered walking and bike parking areas that remain dry even if the weather is rainy. While Worcester currently includes amenities that positively contribute to the city centre, there are still areas for improvement. Bike Worcester identified 16 places where the addition of new bike racks would be useful (Bike Parking, 2026). Bike Worcester also identified 33 places where the addition of benches would be useful (Benches, 2026).

2.4.4 Safety in Worcester

Bicycle theft is also a documented issue in Worcester, UK. Bike Worcester conducted a study between May 2020 and June 2020 and found that 88 bikes were stolen during that time, and only 6 were recovered (Bike Worcester).

Bike racks provide a safe location to lock a bike, preventing theft. Figure 6 shows bike rack locations in Worcester that were recorded by the general public and reported to Bike Worcester. Each point on the map is a location of a bike rack with the color depicting the quality of the bike rack. Red represents poor bike racks while blue is neutral and green is good. Since 2021, Worcester City Council has been adding construction of bike racks to projects that are out for bid (Timetric, 2016).



Figure 6: Bike parking (Bike Worcester)

Another major safety concern to active travel is the short distance with which cars may pass bikes on the road . The city does not have passing laws which could be the leading cause for the high volume of near misses. Figure 7 is a map created by Bike Worcester to help people report near misses they had with vehicles while biking.

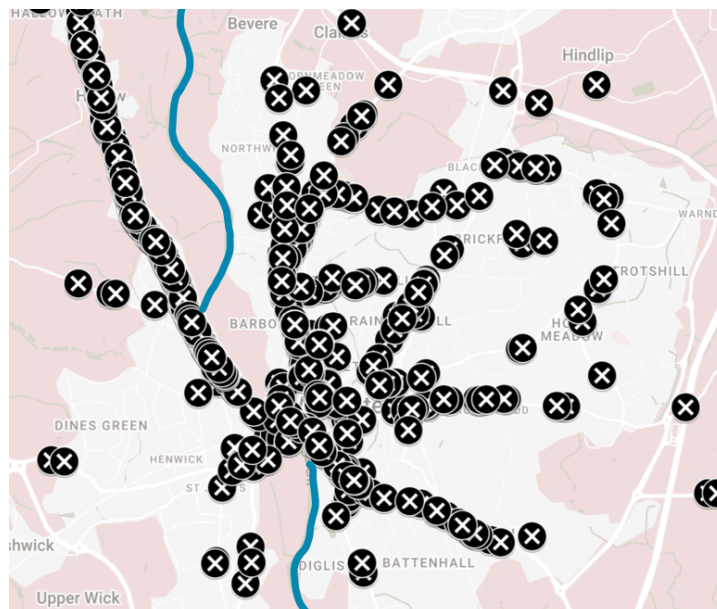


Figure 7: Close calls map (Bike Worcester, 2024)

Bike Worcester's intended goal was to collect data and see hot spots of where near misses most commonly happen. To collect this information, Bike Worcester created a website so bikers could report where they experienced a near miss. The data that was collected by Bike Worcester did not show hot spots but instead brought to light that near misses are quite common all over the city.

Another study conducted by Bike Worcester, showed that a third of near misses involve a vehicle passing too closely and not giving the cyclist enough room. It also showed that 3 in 5 serious cycling injuries and deaths involve a vehicle not giving enough room to the cyclist when overtaking. In 2023, the UK reported that 87 cyclists were killed from a car not giving enough room and another 14,912 were injured (Reported Road Casualties in Great Britain, 2023). Data like this is discouraging to people looking to travel by bike, especially when slower and less experienced cyclists are most affected. As shown previously in Figure 3 and also stated by Bike Worcester, those bikers traveling less than 8mph are three times more likely to experience close passes (Bike Worcester). Bike Worcester notes that the West Midlands police department launched its own campaign to enforce passing distances. As a result of this campaign, there was a 20% reduction in casualties amongst vulnerable road users in under 12 months (Bike Worcester). This campaign eventually resulted in a 50% reduction in close passes. Success like this is encouraging for active travellers and supports why the UK should make this an official law nationwide.

To keep bike commuters off roads and safe, governments have started to build dedicated bike paths (Fiol et al., 2022). Bike paths are paths that can only be walked and biked, usually located away from a road. These paths have made major improvements, but disconnected bike and walking lanes present their own barriers to active travel. While it is assumed that all paths are connected, that is unfortunately not the case in Worcester. Throughout the city some paths exit onto a street, leaving walkers and bikers traveling long distances on the road to get to the next path entrance. Situations like this put active travellers at risk because they may not know they have to share roads with cars. Figure 8 shows an example of the discontinuity of paths with long breaks until the next bike path entrance. The cars on the map represent parking and the different color lines represent different bike paths. While all the bike and walking paths shown on the map are safe, a majority of them end on streets and do not connect to other bike paths.

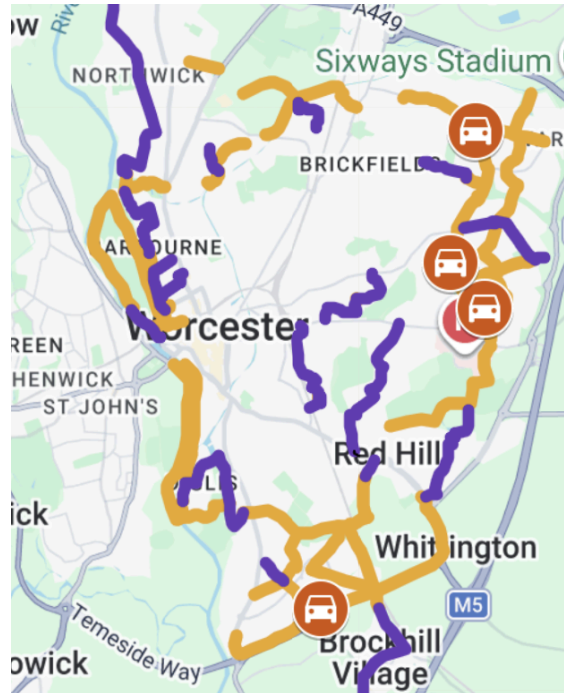


Figure 8: Safe routes (Bike Worcester)

2.4.5 How Worcester UK Supports Active Travel

A project known as the High Street Fund, which took place in 2021, resulted in millions of pounds being invested into the city centre focused on making active travel easier (Worcestershire County Council, 2021). Worcester started incorporating biking and walking lanes into the roadways around the city. According to Timetric (2016), Worcester approved an \$85 million dollar project that would include construction of carriageways, pedestrian ways, crossings, interchanges, and related infrastructure, as well as installation of overhead signals and street lights. This was the first major step Worcester has taken towards making active transport safer. Later, in 2021, the “government announced that Worcester City Council’s bid was successful for funding from the Future High Street Fund” (Worcestershire County Council, n.d.) – another major step. This project included upgrading all footway areas with new materials and new cycle shelters (example in Figure 9) along Cross Street, a well known tourist destination because of its history and historic buildings (Worcester News).



Figure 9: Cycle shelter (Worcester City Council)

2.4.6 Worcester City Centre Transport Strategy

Figure 10 shows a cluster of retail shops, highlighted in yellow, situated along the roads and pathways in the Worcester city centre. The roads in light orange, toward the centre of the city in the map indicate the pedestrian shopping district in the Worcester city centre which includes a variety of stores, cafes and pubs. Worcester also has two pedestrianized shopping centres in the city centre, Chapel and Friary Walk. Together, they include over 50 different businesses ranging from grocery shops, cafes, second hand shops, clothing stores, toy stores and more (Crownsgate Shopping Centre, 2022).

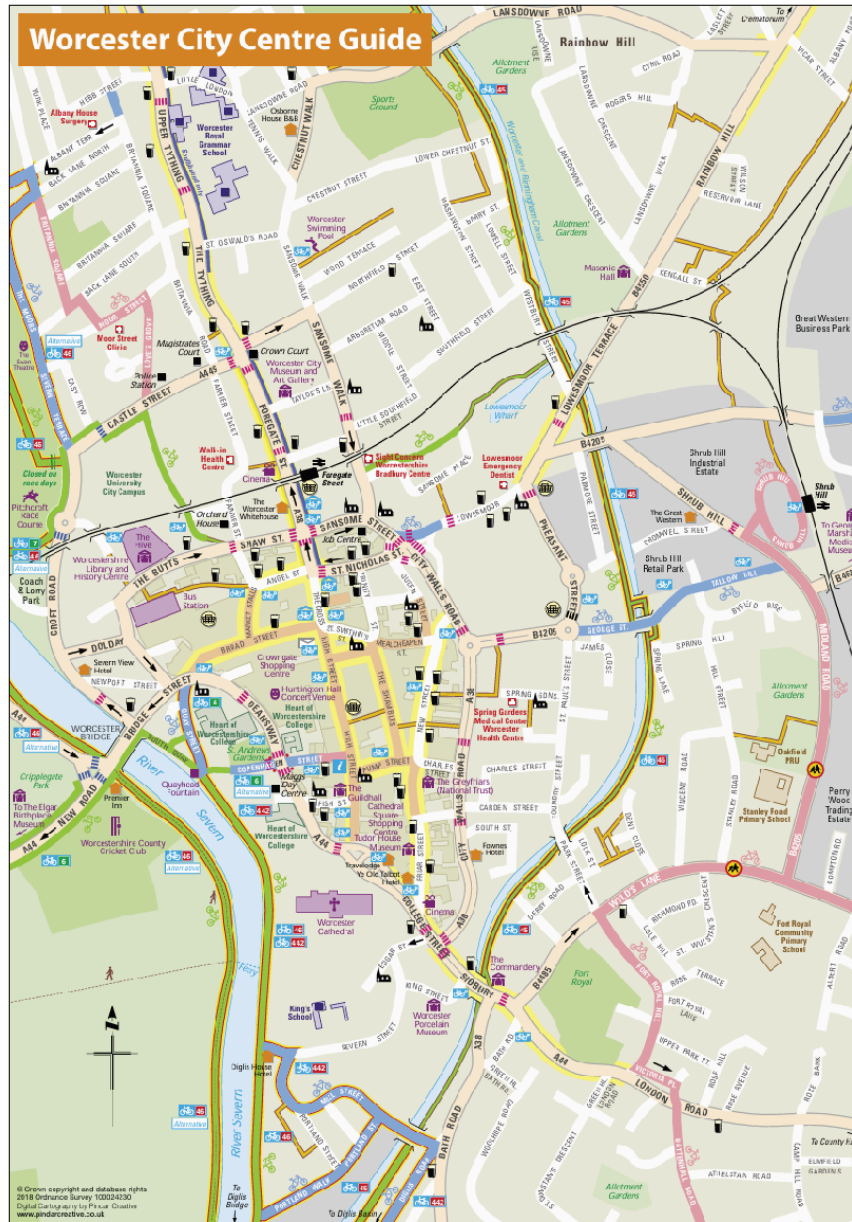


Figure 10: Worcester city centre walking and cycling guide (Worcestershire cycling and walking guides)

The Worcester city centre serves as the go-to destination for shopping, job opportunities, and leisure in Worcestershire. However, as the city expands, the infrastructure is struggling to keep up. According to the Worcester City Centre Transport Strategy (Worcestershire County Council & Worcester City Council, 2023), the city centre is fighting against a few main issues: congestion, safety, flooding, and a less than ideal arrival experience from public transit.

A huge portion of the traffic in the city centre is just “through traffic”, meaning that people aren’t stopping there, but are using the city streets as a path or shortcut to get to the other side. This adds a significant amount of congestion.

Further, the city sits right on the banks of the Severn River, and key roads and parking lots are in the floodplain. This means when the river’s water level rises, key access points get cut off due to flooding, causing a major impact on the city’s operations. The proposed Worcester City Council and Worcestershire County Council strategy is to redirect traffic, consolidate parking, and prioritise sustainable travel over private car use.

An earlier transport strategy surveyed the support of Worcester residents for different types of transport improvements. The proposed improvements with the highest level of support included rail station enhancements, local highway improvements, improvements to cycle and walk infrastructure, encouraging greater use and improving perception of sustainable modes, major highway improvements, and enhancing public spaces (Worcestershire County Council, 2010). This strategy indicates that there is a general level of support among the local public for improvements to active travel infrastructure, alongside support for highway improvements.

2.5 Understanding Active Travel to Worcester’s City Centre

Worcester’s current strategies are heavily infrastructure-dependent, like changing road layouts or building bridges, but fail to advocate for the behavioural change needed to shift public habits. While general transport strategies address commuting, there is a lack of answers aimed at retail shoppers and store owners (Convery and Williams 2019). Existing initiatives focus on higher level planning. Advocacy organizations like Bike Worcester seek to undertake research that can recommend actions to make biking and walking more intuitive and preferable for short shopping and business trips.

Most of the congestion in Worcester happens in the city centre where the Chapel and Friary Walk Shopping Centres and other retail destinations are concentrated. Shopping and business trips represent a substantial proportion of urban journeys and are often made by car even when the distances involved are relatively short and could feasibly be covered by bicycle or on foot (NTS 2024: Mode share and multi-modal trips, 2025). This concentration of businesses

in a single area contributes to high traffic volumes, and shifting more trips to walking or cycling could help reduce congestion and improve overall accessibility.

Bike Worcester is a grassroots organisation in Worcester, UK dedicated to making cycling a safe, popular, and accessible choice for everyone (Bike Worcester). Bike Worcester has a team of volunteers who spend their time encouraging and enabling people in Worcester to travel actively (Bike Worcester). In collaboration with these organisations, this project focuses on travel to businesses within the city centre. The project was proposed by Bike Worcester to better understand why people travel into the city centre, how they choose to get there, and how these choices compare to retailers' perceptions of customer transportation.

By collecting and analysing active travel data, the project aims to identify barriers to active travel and develop practical, evidence-based recommendations that Bike Worcester can use to encourage a shift from car use toward walking and cycling. A shift to active travel would contribute to reduced traffic congestion in the city centre, lower air pollution, and healthier lifestyles for residents. Ultimately, the project supports a vision of a more sustainable and liveable Worcester, where active travel becomes the intuitive choice for shopping trips. To achieve this, Bike Worcester requires clear, locally specific evidence on the key barriers, motivations, and behaviours influencing travel choices in the city centre, enabling them to design targeted and effective interventions to increase walking and cycling.

3. METHODS

The goal of this project was to promote biking and walking in the Worcester city centre. To achieve this goal, we identified five main objectives:

1. Document walking and biking patterns of business and retail patrons in Worcester
2. Analyse barriers to biking and walking to businesses
3. Determine motives for transportation choices commonly used in Worcester
4. Identify business owners' perceptions about how customers travel
5. Draft materials for promoting biking and walking

We used specific methods for achieving each objective, such as surveys, interviews, and qualitative observation, built to assist effectively with each objective. Also, when conducting these surveys and interviews, consent statements, seen in [Appendix A](#) and [Appendix B](#), were presented at the beginning to ensure that the participant was aware of our intentions with the data collected.

3.1 Document Walking and Biking Patterns of Business and Retail Patrons in Worcester

To achieve this objective the team distributed survey questions (See [Appendix C](#)) on Bike Worcester and Worcester Business Improvement District (BID) social media platforms to gather data about their followers' transportation use and preferences. For Bike Worcester, the surveys were distributed on Facebook, Instagram, and Strava. For BID, the surveys were distributed on Facebook, Instagram, and LinkedIn. Bike Worcester's e-mail list was also used to send the survey to the leaders of Bike Worcester.

The team placed QR code flyers ([Appendix D](#)) linked to surveys (See [Appendix E](#)) at local businesses. The surveys were created using Qualtrics, a survey platform, and asked respondents to provide data about which form of transportation they used to get to the business, how often they use that form of transportation, and the amount of time that their transportation takes. At businesses such as cafes, restaurants, barber shops, and electronic repair shops ([Appendix F](#)), the QR codes were generally placed in locations such as cash registers, tables, and

community advertisement boards. Survey responses were also collected by approaching students in the University of Worcester St. John's Cafe.

An outline for observations was also created (See [Appendix G](#)). The method required three team members to be designated as observers of walking, biking, and driving. Observations in a single location were split into three separate observation periods, with the observer roles being switched for each period. Observers were tasked with taking note of any conflicts that different modes of transportation had with each other.

Lastly [Telraam S2](#) vehicle and pedestrian counter was used to count the number of pedestrians, drivers, and cyclists travelling through two locations over time.

3.2 Analyse Barriers to Biking and Walking to Business and Potential Solutions

To meet this objective, the team conducted similar methods with focus on a different audience. Questions about barriers were added to previous surveys to gather information directly from retailers and Bike Worcester members who use or could potentially use active travel. The survey questions collected data about participants' preferred modes of transportation under varying environmental conditions, the factors influencing decisions to drive, bike, or walk, and specific safety concerns. A sample of the survey questions can be found in [Appendix H](#).

Interviews conducted by the team were used to provide a deeper understanding of barriers to active travel. The group used semi-structured interviews, which were conducted in person and over video call. This was performed by engaging Bike Worcester leadership members who specialize in the field and have conducted prior research on active travel barriers. Interviews explored topics such as key challenges faced by cyclists, the existing infrastructure, the impact of flooding and weather events, and the availability of bicycles suitable for transporting goods, such as bikes with baskets. See [Appendix I](#) for sample questions. These interviews provided qualitative insights that contextualize survey findings and highlight barriers that may not be evident through quantitative measures alone.

The team analysed archival research, such as maps and previous studies, to verify and compare acquired data from surveys and interviews. This research of path conditions and connectivity issues, trail usage, and pedestrian and cyclist behaviour was documented and

compared to data collected from surveys and interviews. Archival research was performed by the team after surveys and interviews were concluded.

3.3 Determine Motives for Transportation Choices Commonly used in Worcester

To meet this objective the team focused on identifying transportation modes and understanding the key factors influencing these choices. Surveys were distributed through Bike Worcester's social media platforms to assess what motivates or discourages current Bike Worcester followers to choose or not choose active travel and identify potential strategies for increasing active transportation used for shopping and business trips. See [Appendix C](#) for these survey questions.

Additional flyers with QR codes linked to short online surveys were distributed at multiple stores throughout Worcester such as in the city centre and Chapel and Friary Walk. The surveys asked participants to indicate their mode of transportation, frequency of visits, and travel time to reach the store. This allowed our study to capture mode choice specifically from the individuals actively making trips to retail stores and other businesses. See [Appendix E](#) for these survey questions.

Semi-structured interviews were conducted with volunteers and members of Bike Worcester to gather insight into observed shopping-related transportation choices and perceived motives for active travel in Worcester, with the main focus being in the city centre. See [Appendix J](#) for these interview questions.

3.4 Identify Business Owners' Perceptions about how Customers Travel

To execute the third objective, surveys and interviews were conducted to document business owners' thoughts about how customers arrive at shops in the Worcester city centre. The Worcester BID and the manager at the local shopping mall, Chapel and Friary Walk, distributed our survey through their email lists. The questions are in [Appendix K](#). Also, in order to create a more personal connection, these surveys were given to business owners to determine their specific perceptions of how customers commute to their retail stores, consequently aligning with Objective 3. The surveys were comprised of multiple-choice style questions and were designed to be brief and to respect participants' time. These surveys were emailed to reach a larger

population of business owners in order to provide a comparison of business owners' perceptions versus the documented data from Objective 2.

Semi-structured interviews were conducted with local business owners to gather insight into how they believe customers are traveling to their shops. The purpose of these interviews was to better understand business owners' thoughts and concerns about active travel and to have a better comprehension of possible solutions to their concerns. The group asked detailed questions about their shops and customers, their and others transportation choices, and concerns and factors related to shopping. A sample of the interview questions can be seen in [Appendix L](#).

3.5 Draft Materials for Promoting Biking and Walking

The final objective of this project was to provide Bike Worcester and local stakeholders with actionable tools and compelling visual evidence which can be used to advocate for a shift towards active travel for retail trips. To achieve this, the team analysed and integrated quantitative data from surveys with qualitative insights from interviews.

To make these findings accessible and persuasive, we focused on creating a few sample infographics. We developed a set of infographics that directly contrast business owner perceptions with actual consumer behaviour, promote the awareness of cyclists and sharing the road to drivers, and encourage the use of cycling.

These infographics illustrate the local business owners' concerns versus reality, providing Bike Worcester with a clear narrative to bridge the gap between the business interests and active transportation goals.

4. RESULTS

This chapter presents the results and key findings of the project based on data collected through surveys, interviews, and research. The findings help address a lack of information about transportation methods used to travel to the city centre and inform recommendations on how the city can make improvements to support active transportation.

4.1 Active Travel Patterns

The team received 202 responses to online and in-person surveys on active traveller when commuting to businesses in the city centre. The in-person survey responses were primarily used to make conclusions about the general population since the social media surveys included participants more interested in sustainability and cycling. The data shows that walking and biking make up a significant portion of transportation to the city centre, but cars still make up a significant share.

The most commonly reported transportation methods from the city centre survey ([Appendix E](#)) were walking (38%), car (28%), bicycle (19%), train (9%), bus (4%), and motorcycle (2%) (Figure 11).

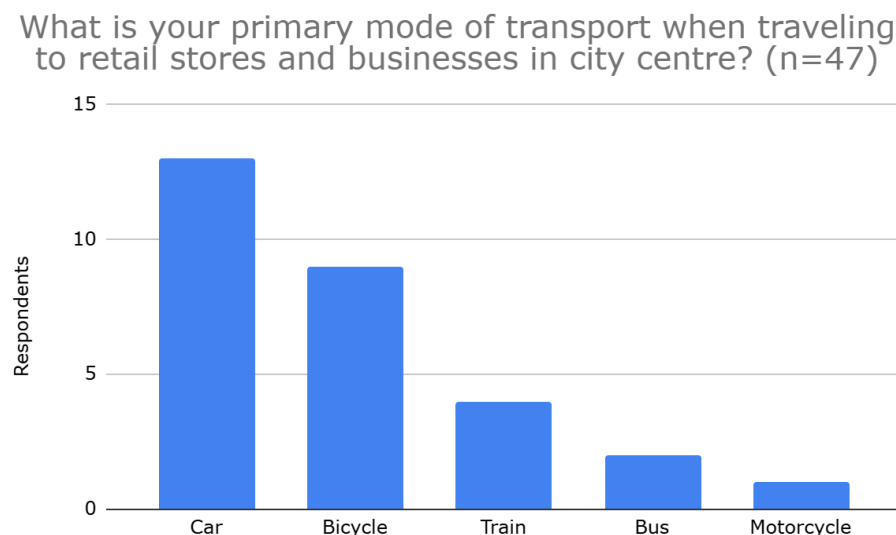


Figure 11: Reported primary mode of transport to city centre from in-person surveys

The reported travel times for each method were averaged using the middle value of the selection ranges and including the written in values under other. The modes with the longest travel times were cars, buses, walking, and bikes. Those who drove to the city centre tended to have longer travel times of 20 - 30 minutes, with some reaching an hour or more. The two respondents who chose buses reported travel times of 40 and 45 minutes. Those who chose walking and biking reported shorter travel times, with travel times for walkers being longer than bikers. The average travel time for walkers and bikers was about 16 minutes and 10 minutes respectively. Travel time responses for walking included the full range of responses from 0 - 5 minutes to 20 - 30 minutes. Responses for bikes on the other hand included only 5 - 10 minutes and 10 - 20 minutes, although there are only 3 responses in this group.

The long travel times among drivers may indicate that cars are primarily used to travel from neighbouring towns that are too far to walk or bike and the short travel times on bicycles may indicate that people use bikes more so for short-distance trips (Figure 12). While the data suggests that cars are mostly used for longer trips, about 28% of the reported city centre car trips were 10 minutes or less, suggesting that there is still a significant amount of short car trips that could otherwise be bicycle trips.

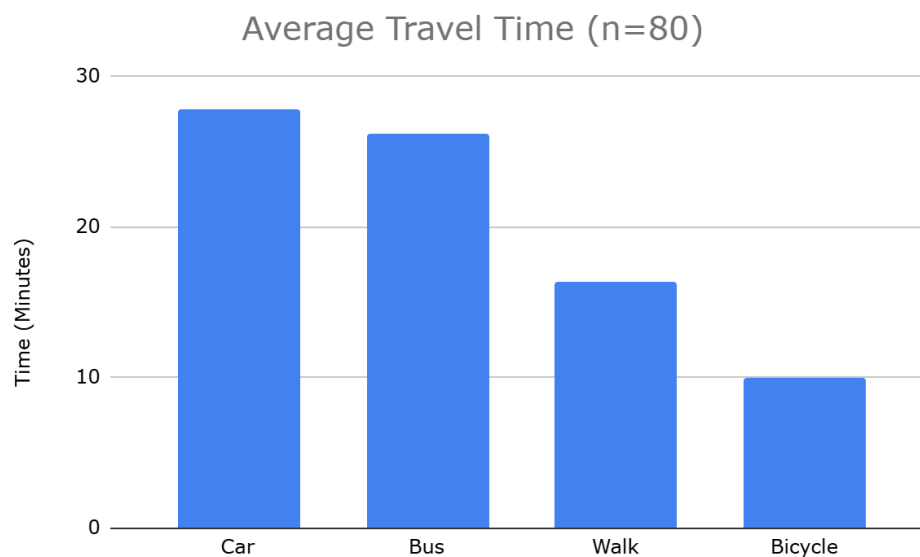


Figure 12: Average travel time to city centre from in-person surveys

The data suggests that many people drive to the city centre everyday instead of using more sustainable transport methods, presenting an important area for improvement (Figure 13). The frequency of travel was similar for both walking and car use, with most people saying that they walk or drive either daily or weekly. Three respondents who chose biking as their transport mode reported that they bike daily, with one choosing weekly. About the same number of people reported walking daily to the city centre. The city centre currently has a significant amount of active transport use, but there is room for improvement.

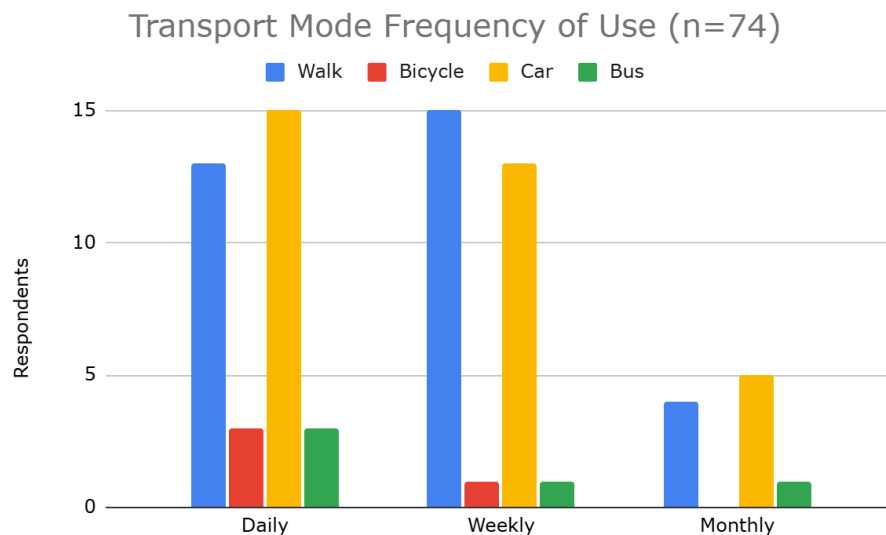


Figure 13: Travel mode frequency from in-person surveys

The most commonly reported transportation methods from the social media survey ([Appendix C](#)) were walking (37%), bicycle (31%), car (26%), and bus (6%) (Figure 14). The social media surveys have a higher portion of bicycles in the responses, which may be due to the BID and Bike Worcester social media posts being associated with more sustainability and cycling advocacy, thus selecting for a group that cycles more often.

What is your primary mode of transport when traveling to retail stores? (n=35)

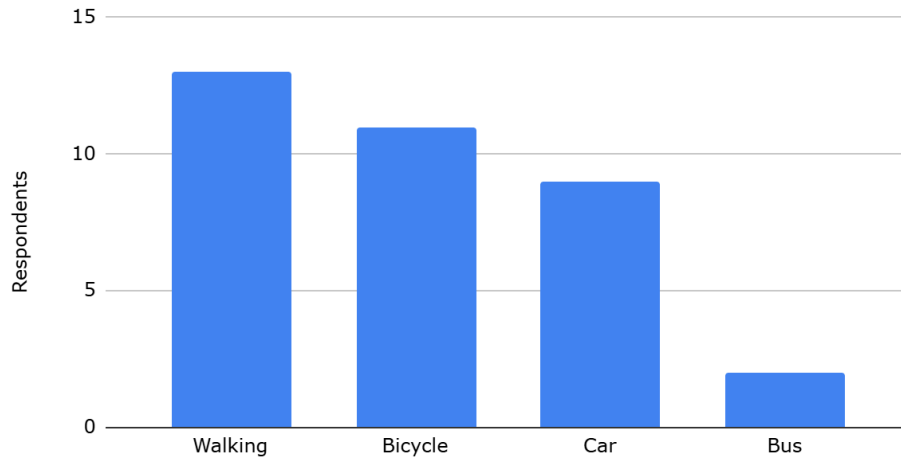


Figure 14: Reported primary mode of transport to stores from social media survey

The average travel times for each mode from the social media surveys listed from longest to shortest were buses (15 minutes), walking (15 minutes), cars (13 minutes), and bicycles (11 minutes) (Figure 15). The travel time reported by car and bus users was lower in this survey than the in-person survey. As mentioned before, this may be due to the higher level of sustainability and cycling focus among those who saw the BID and Bike Worcester posts.

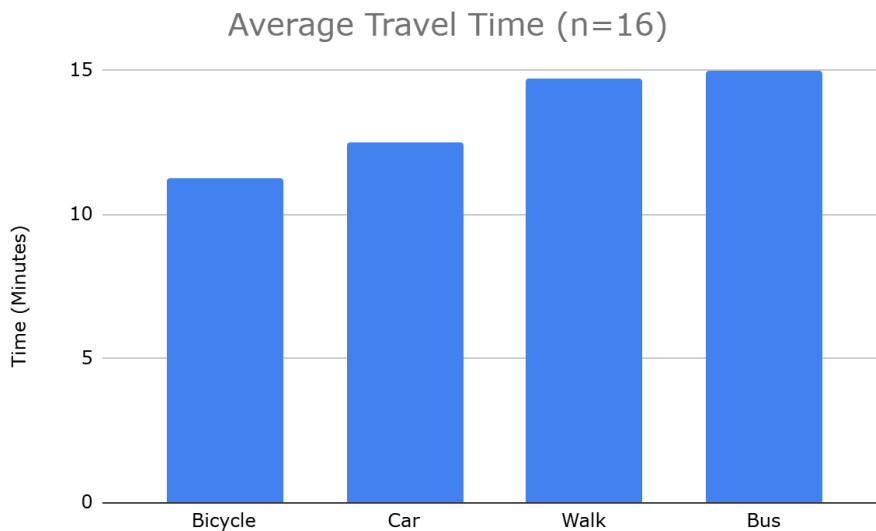


Figure 15: Average travel time to city centre from social media surveys

The travel frequency question in the social media survey was formatted differently than the frequency question included in the in-person survey. The respondents selected how often they use each transportation mode within a table, allowing each respondent to provide data about multiple modes ([Appendix C](#)). This makes comparing this data to the in-person survey data more challenging, since the in-person survey results would probably under-represent modes of transport that respondents use less frequently. Nevertheless, the social media survey results in Figure 16 show a significant frequency of walking, cycling, and driving. This data suggests that this group of people mostly walks and bikes daily, and drives on a weekly basis. Again, these results may favour more walking and biking, and less driving than the general population due to the setting of the survey.

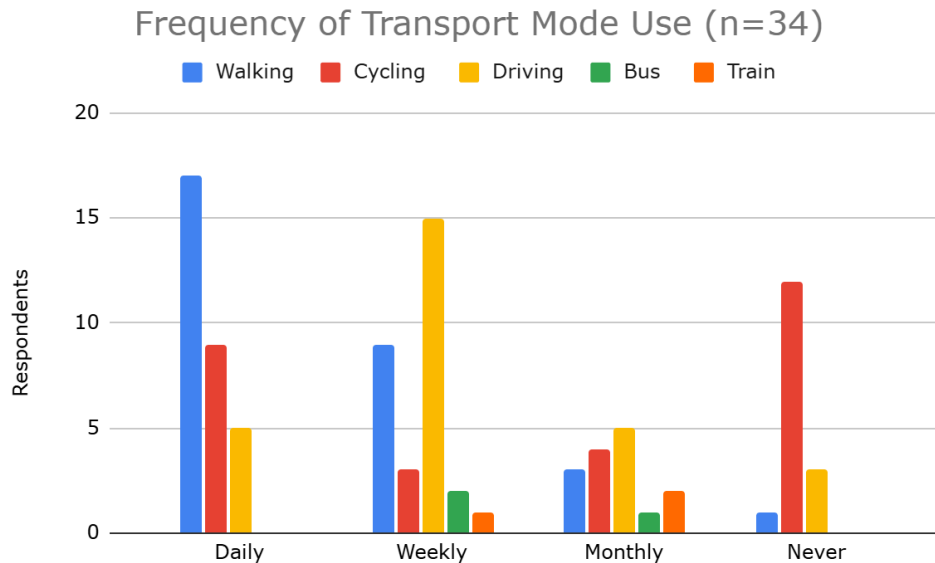


Figure 16: Travel mode frequency from social media surveys

Overall, this data indicates that there is still a significant level of car use for longer-distance trips to the city centre, indicating that the option to use the train for these trips is not appealing enough for these individuals. There also appears to be a significant minority of car trips that are short enough to be biked instead, suggesting that there may be a need to address barriers to cycling to further reduce car use in Worcester.

The sample size on some mode analyses is small due to the limited time that the team had to collect data and the limited reach of our surveys. For example, the sample size of buses is

quite small, limiting the conclusiveness of the corresponding travel time and frequency data. This is also true to a lesser degree with bicycles. The distribution of surveys on social media and QR codes at businesses were the most effective methods for getting large numbers of survey responses, but soliciting for survey responses on the streets of the city centre was more difficult due to the lack of motivation for people to take our survey. The observations of active traveller behavior was also not able to be conducted due to limited time. These observations could be useful for a future team collecting data in more detail about active traveller behavior.

4.2 Barriers to Active Travel

The team collected data on current barriers that active travellers face when commuting to businesses in the city centre. As shown in Figure 17, carrying goods is the most influential factor on active travel. Along with that factor, there are also smaller factors like safety, weather, travel time, cost, and distance. Figure 17 also illustrates what factors most influence choice of transport to retail stores. The data collected from this question and shown in the figure shows that all forms of transportation, walking, biking, car, and bus, are heavily influenced by carrying goods. Walking is also heavily influenced by weather, while fewer people using other modes of transportation chose either as an influential factor. Distance followed the same trend as carrying goods did, but with fewer participants saying it was an issue.

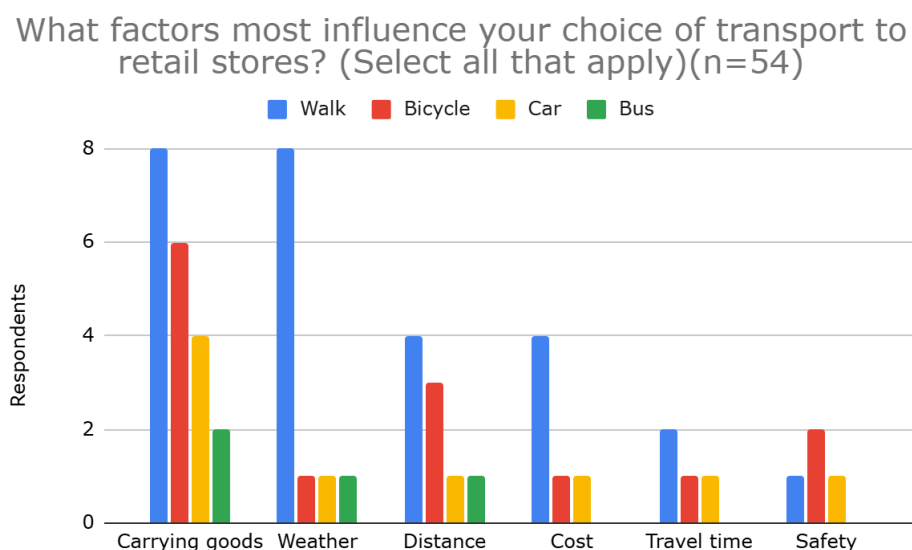


Figure 17: Factors influencing transport choice

The survey also asks how long it takes you to reach the city centre from your residence; the results from this can be seen in Figure 18. These results show that travel time by walking and driving tends to be 10-30 minutes, while biking is 5-20 minutes, and the bus is evenly spread out across 0-30 minutes. This data shows that longer distance trips are made by car rather than walking or biking.

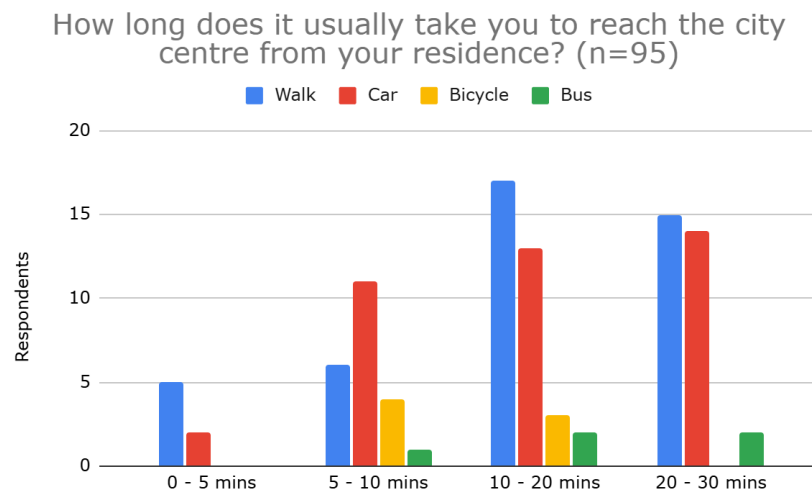


Figure 18: Travel times

The final question was about identifying the main cause of unsafe travel in Worcester. The data recorded from these answers can be seen in Figure 19. These responses revealed four big issues: motor vehicle traffic, lack of dedicated walking and cycling paths, poor path condition, and poor visibility due to lighting. One conclusion from comparing the results of Figure 18 and Figure 19, is that those taking cars could switch to bikes, but don't due to concerns about paths and motor vehicle traffic.

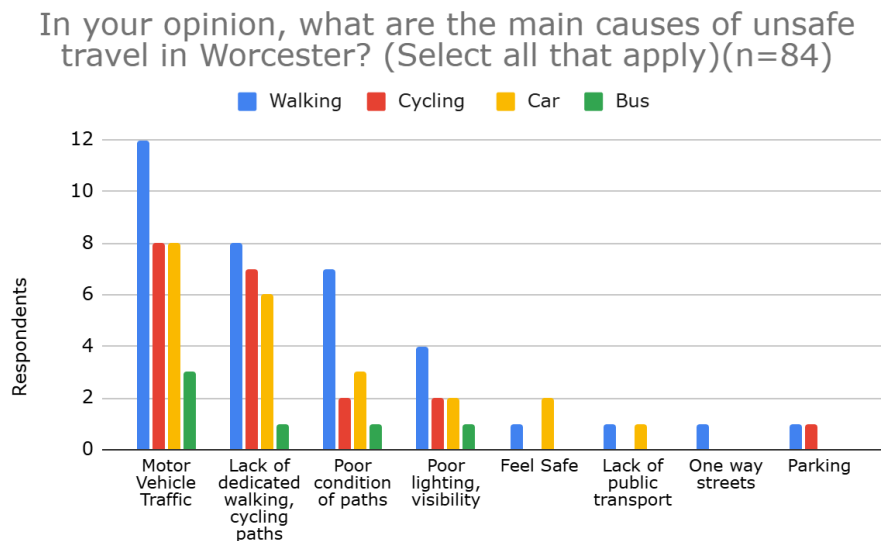


Figure 19: Reasons for unsafe travel

The findings from in person semi-structured interviews reinforced survey data and also brought new perspectives on the barriers to active travel in Worcester. The team conducted two interviews with Bike Worcester leadership and one business owner. The Bike Worcester and business owner interviews were significantly different, but both groups agreed on theft being an issue within the city. They mention how there used to be a secure bike storage area within Friary Walk from 2020 to 2025, which made a noticeable increase in biking. They all went on to note that everyone was very upset when Friary Walk closed the storage area to bring in a new store. Bike Worcester members also reported that not being able to bring bikes on buses in Worcester is a significant issue. The current bus infrastructure does not support traveling with a bike.

Another recurring issue the Bike Worcester members mentioned is the number of near misses active travellers experience. Interviewees noted they believe a majority of near misses occur at intersections. Drivers make very sharp turns, giving cyclists little room, resulting in a scary experience. They also noted the reason cyclists have to be in these intersections is because of the lack of connected bike paths. As stated earlier, many bike paths and bike lanes are not connected, forcing the cyclist to bike on busy roads to get to the next path. The members also noted that even if the connection issues are fixed, there is still the issue of transporting goods. They say it is extremely hard to transport goods on a normal bike, but much easier with transport

bikes. Transport bikes have a large bin in the front of the bike designed for carrying goods. In London, there are programs that will provide access to these bikes for free and/or for rent.

Archival research performed while writing the background has been proven true by surveys and interviews. For example, in our initial research we found that bike theft was a big issue in Worcester and that proved to be true during our interviews. Research conducted on barriers before this project and discussed in sections 2.2 and 2.4, showed there were a significant number of steps which needed to be made to support effective and efficient active travel. During our archival research we also found that the abrupt disconnection between paths caused unsafe travel which responses to our surveys and interviews proved to be true.

The team had success collecting data on barriers; there were also some limitations. Lack of time to collect surveys played a major role in the amount of data we could collect. The team used short question surveys with the plan of changing the questions each week to increase participation, which worked. The downfall of this method was that there were only three weeks to survey. The audience also played a role in who was willing to take the survey. People who were out shopping did not want to spend time filling out a survey, while people who were sitting down eating were more willing.

4.3 Motives for Active Travel

Interviews suggest active travellers choose walking and cycling because these modes provide a direct and reliable way to reach the city centre, with participants describing them as “the quickest way” and “more predictable than driving.” In contrast, driving was often associated with delays from traffic and the added challenge of finding parking. Participants also noted that active travel allows for “greater freedom of movement”, making it particularly appealing for short routine trips such as shopping or visiting local businesses.

Time efficiency emerged as a key motivating factor across both survey and interview responses. As previously seen in Figure 15, 32% of the participants noted that for shorter journeys, especially within or near the city centre, walking and biking can often be quicker than driving or taking the bus. Cyclists emphasised that biking allows them to “avoid congestion and take more direct routes”, reinforcing the perception that it is one of the fastest ways to travel

locally. Interview results show that active travellers support that when distances are manageable, individuals are more inclined to choose active travel based on its practical advantages.

Two other important themes are familiarity and experience. Interview responses indicate that individuals who regularly walk or cycle tend to view these modes as easy, convenient, and even preferred over driving. This indicates that confidence and routine play a significant role in shaping motivation. Once active travel becomes a habit, it is no longer seen as an alternative option but rather as the default choice. In contrast, those with less experience are less likely to consider it, even if the potential benefits are recognized.

In addition to convenience and time savings, personal and lifestyle benefits also contribute to motivation. Some participants identified walking and biking as ways to incorporate physical activity into their daily routines without requiring additional time and effort. Active travel can also offer a more enjoyable and engaging experience compared to motorized transport, allowing individuals to interact more closely with their surroundings. These qualitative benefits, while less frequently cited than convenience, still play a role in encouraging certain individuals to choose active modes.

Overall, survey and interview results show that active travel in Worcester is strongly associated with convenience, efficiency, and personal benefit. These motivations demonstrate that walking and cycling are already viewed as viable and attractive options, particularly for short distance shopping and business trips. Expanding their use will depend on strengthening these existing motivations and making active travel feel like a natural, accessible choice for a wider range of people.

4.4 Business Owner Perceptions of Active Travel

The team distributed surveys to over 30 business owners through the Worcester BID email list. Also, the manager of Chapel and Friary Walk distributed over 40 letters to all business owners in the shopping centres; an example of this letter can be seen in [Appendix M](#). In total, we collected 13 responses in addition to conducting an interview with a local business owner. In Figure 20, the survey data showed that 11 of the 13 owners reported their customers drive to their establishments, with one owner saying customers bus and one owner reporting that the majority of their customers shop online.

What form of transportation do you think your customers primarily take to your shop? (n=13)

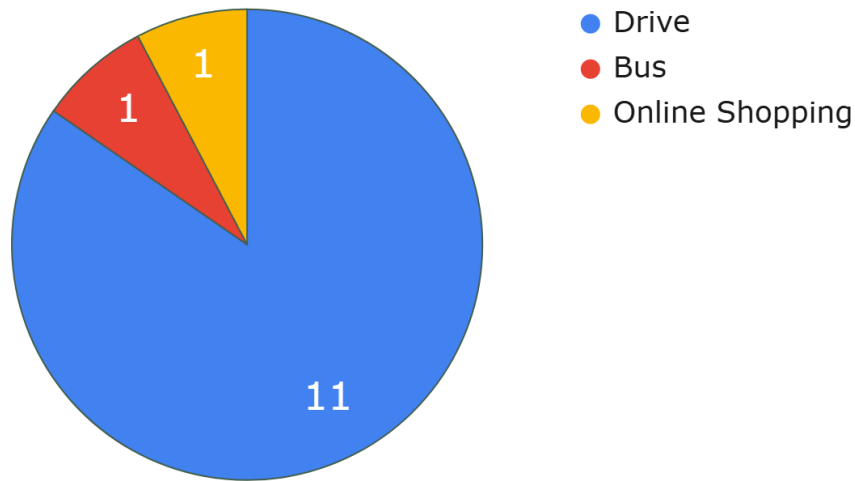


Figure 20: Responses from business owners for their customers' primary transportation choice

The owners were asked if customers' transportation choices affect sales, if poor weather affects sales, and if customers have concerns about walking or biking to local businesses. The owners were given three options: Yes, Maybe, and No. The responses to these questions can be seen in Figure 21. Along with the multiple choice responses in Figure 21, owners were encouraged to elaborate on their choices. For Figure 21a, those who responded "No" only noted that their customers travel from far away or they do not sell large items. For the people who responded "Yes" or "Maybe", the majority of the owners mentioned the lack of parking and the inconvenience of parking due to cost. In Figure 12b, there was an even divide as to whether or not weather affects a business's sales. For owners who chose "No", they stated that their customers have pre-booked appointments, so poor weather does not interfere with their sales. Meanwhile, the owners who responded "Yes" or "Maybe" expressed that poor weather, like heavy rain or extreme hot and cold temperatures, generally cause a decrease in sales with the exception of one owner whose business revolves around indoor entertainment. Lastly, in Figure 21c, the business owners were asked if they "think customers have any concerns about walking or biking to local businesses?" For the business owners who responded "No", only one person elaborated and wrote that they "get plenty of customers who live in the city." In comparison, the owners who answered "Maybe" noted their customers might be able to walk, but they are unsure

about cycling. Finally, all owners who responded "Yes" expressed concerns related to cycling with the main issues being bike theft and safety concerns for the cyclists.

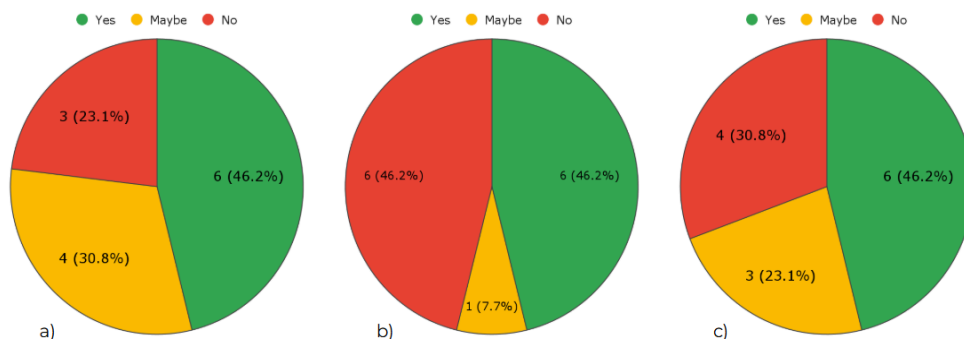


Figure 21: Responses from business owners for a) transportation choice effects sales; b) poor weather effects sales; c) customers' concerns about active travel (n=13)

Similar findings were noted during an interview with a local business owner who sells eco-friendly goods. The interview gave the team more insight into the shopping and transportation culture in Worcester. The team learned that at age 65 you get a free bus pass in England and carrying purchased goods is the biggest influence on a person's transportation choice. Also, during November and December, sales increase due to the winter holidays and the annual Victorian Fair. Both events draw in crowds from all over the country and beyond.

When analysing the quantitative and qualitative data from the business owners in comparison with the survey data collected for Objective 1 and Objective 2, the team found that there were more differences than similarities. The main commonality found was that bike theft is a major concern for both owners and the general public. Plus, the Worcester infrastructure is not well suited for cycling, forcing cyclists into unsafe situations.

As for the differences, the majority of business owners agreed that the primary mode of transportation used by their customers is driving, while our general survey determined that walking is the preferred mode of transportation to the city centre. Also, the in-person and social media surveys determined that carrying goods and weather were the largest influence on transportation choices to businesses. However, only half of the owners surveyed expressed that poor weather affects their sales.

The data collected showed a significant difference between the business owners' perceptions and the transportation patterns and barriers in Worcester. However, additional survey responses and interviews would have provided more data from a larger population of business owners. Due to the Easter holiday and the team's short time frame, we were not able to collect as much as we intended. Also, few business owners were willing to complete our survey and those owners who expressed interest in being interviewed never responded to the team's emails.

4.5 Promotional Materials

To translate our research and findings into a format suitable for public advocacy, the team produced a set of infographics.

The first infographic, seen in [Appendix N](#), compares the perception of business owners with the recorded consumer data. This quantifies the “perception gap” and allows Bike Worcester to convey that active travellers are the invisible majority, exceeding cars by nearly 3-to-1 based on our survey results.

The second infographic, seen in [Appendix O](#), promotes the importance of carefully sharing the road with pedestrians and cyclists. From our survey results, vehicle traffic is the number one concern among active travellers. The map from Bike Worcester of vehicle-cyclist near misses in Worcester helps emphasize the importance of this issue.

The third infographic, seen in [Appendix P](#), was a fact sheet made for the general public to encourage the use of bicycles over personal vehicles by showing the benefits through direct comparisons.

Finally, we installed a Telraam traffic counter in the window of a vacant unit above Chapel Walk, facing High Street. The Telraam will provide Bike Worcester with counts for vehicles, pedestrians, and cyclists that pass through the area and keep track of the direction. The data collected can help Bike Worcester support and receive funding for proposed projects or improvements endorsing walking and cycling.

5. RECOMMENDATIONS

The following recommendations are presented as suggestions for Worcester City Council, Worcestershire County Council, the federal government, local bus companies, and Bike Worcester. Based on the findings presented previously, the recommendations are designed to help support active travel and make it safer.

R1: We recommend that the City Council install more bike lockers in high traffic areas of the city centre. Lockers such as those shown in Figure 22 have already been installed under one of the arches near Foregate station. These lockers cost money to use and are only available near Foregate where there is limited space. The team proposes the City Council purchases and manages these lockers. To use the locker, individuals scan a credit card to open them, once closed the only way to reopen the locker is by scanning the same card. This would create secure and free bike storage similar to the old Friary Walk bike storage room. We suggest free bike storage is limited to 24 hours; if the renter exceeds that time, they will be charged a fixed fee for every day they keep the bike in the locker. This way there will always be spots available for those who need them and the City Council could profit, instead of an outside vendor.



Figure 22: BikeDok (BikeDok)

R2: We recommend the City Council offer free bike racks to city centre business owners.

Free bike racks will give active travellers the opportunity to lock their bike in front of their shopping destination instead of having to walk from bike parking areas which could be located far away. We suggest the City Council provide cyclehoops (Figure 23) because they can be easily mounted to a wall and then later removed if needed.



Figure 23: Cyclehoop (Cyclehoop)

R3: We recommend that bus companies with support from the County Council offer free bike storage on buses. The team suggests adding bike racks like those seen in Figure 24. These racks would only replace one seat on the bus. Each rack that is installed will be able to securely hold two to four bikes, based on the design, length, and location the rack is installed in the bus. This would allow more cyclists to use buses to transport bikes to retail areas.



Figure 24: Bus bike rack (Auckland Transport AT)

R4: We recommend that the City Council offers transport bikes for use in the city centre.

Making transport bikes available for rent or for free to the public, would give shoppers the opportunity to transport goods by bike instead of by car. Currently, there are no transport bikes available in Worcester. We suggest that Worcester City Council work with Beryl Bikes to add transport bikes to their fleet or create their own fleet of bikes. Beryl Bike is a nationwide UK bike rental company that offers a wide range of bikes, e-bikes, e-scooters and cargo bikes (Beryl, n.d.). We suggest Beryl because it would require little effort for the City Council. Currently Beryl offers cargo/transport bikes which come with enclosed storage areas in Hereford; these bikes can be seen in Figure 25. We suggest the City Council works with Bike Worcester to create a small fleet of transport bikes. Rental will require a security deposit that will be refunded when the bike is returned.



Figure 25: Beryl bike (Beryl)

R5: We recommend that the City/County Council and Federal government instate a law enforcing a safe passing distance. A law requiring drivers to give cyclists 1.5 meters of space when passing would make cycling safer for all. An illustration of these distances can be seen in Figure 26. Having a law like this in place will decrease near misses and make traveling by bike safer for the cyclist. Once the law is in place, we suggest that street signs be posted about the new law and police agencies heavily enforce this regulation for a few months.



Figure 26: Passing distance (bridgewater mercury)

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APPENDICES

Appendix A - Consent Statement for Surveys

Informed Consent Statements for Surveys presented to all survey participants

This survey is being conducted as part of a research project that studies perceptions, actions, and opinions about transportation methods and behaviours. Active travel is defined as any form of travel that involves physical activity, including cycling and walking.

Some information collected in this survey may be included in our published research paper. During this survey, we hope to gather information on how you travel, what your thoughts are on active travel, and barriers that you think affect active travel.

All data collected and used from this survey will be quoted with pseudonyms. Answers to questions will be recorded and will be included in their full form within our research. Any personal or identifiable details will be removed to protect privacy.

This survey is a voluntary process, so if at any point during this survey, you feel uncomfortable and decide not to participate, stop, or skip any questions, we will respect your request.

Contract Information: gr-UK26Retail@wpi.edu

Sayeh Asgari, Kyle Berkof, Ashley Kalin, Jacob McCarthy, Alex Tannenbaum

Appendix B - Consent Statement for Interviews

Informed Consent Statements for Interviews presented to business owners and members of Bike Worcester

This interview is being conducted as part of a research project that studies perceptions, actions, and opinions about transportation methods and behaviours. Active travel is defined as any form of travel that involves physical activity, including cycling and walking.

Some information collected in this interview may be included in our published research paper. During this interview, we hope to gather information on how you travel, what your thoughts are on active travel, and barriers that you think affect active travel.

Interviews will last thirty minutes to an hour. During interviews, you will be asked questions related to active travel. This interview will be semi-formal, and we will have multiple follow-up questions based on your answers.

All data collected and used from this interview will be quoted with pseudonyms. Answers to questions will be recorded and will be included in their full form within our research. Any personal or identifiable details will be removed to protect privacy.

This interview is a voluntary process, so if at any point during this interview, you feel uncomfortable and decide not to participate, stop, or skip any questions, we will respect your request.

Before consenting to this interview, you are free to ask any questions you have about our study.

Contract Information: gr-UK26Retail@wpi.edu

Sayeh Asgari, Kyle Berkof, Ashley Kalin, Jacob McCarthy, Alex Tannenbaum

Appendix C - General Social Media Survey Questions

This is a survey for Bike Worcester followers designed to gain insight into the factors that determine peoples' choice of transportation.

What is your primary mode of transport when travelling to retail stores?

- ☐ Car 🚗
- ☐ Bicycle 🚲
- ☐ Walking 🚶
- ☐ Bus 🚌
- ☐ Train
- ☐ Other 💬

How often do you use the following forms of transportation? (Optional)

	Daily	Weekly	Monthly	Never
Walking	☐	☐	☐	☐
Cycling	☐	☐	☐	☐
Driving	☐	☐	☐	☐
Other 	☐	☐	☐	☐

How long does it usually take you to reach the city centre from your residence?

- ☐ 0 - 5minutes
- ☐ 5 - 10 minutes
- ☐ 10 -20 minutes
- ☐ 20 - 30 minutes
- ☐ Other (Please specify)

What type of trips do you most often make to the Worcester city centre?

- ☐ Grocery shopping
- ☐ Restaurant/cafe/pub
- ☐ Retail shopping
- ☐ Other (Please specify)

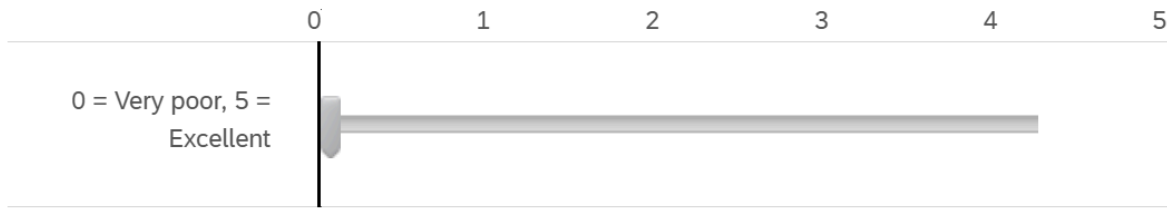
What factors most influence your choice of transport to retail stores? (Select all that apply)

- ☐ Weather
- ☐ Distance
- ☐ Carrying goods/shopping
- ☐ Travel time
- ☐ Cost
- ☐ Safety
- ☐ Other (please specify)

In your opinion, what are the main causes of unsafe travel in Worcester? (Select all that apply)

- ☐ Motor vehicle traffic
- ☐ Lack of dedicated walking/cycling paths
- ☐ Poor condition of walking/cycling paths
- ☐ Poor lighting/visibility
- ☐ Other (please specify)

How would you rate the connectivity of walking and cycling paths in Worcester?
(Optional)



Please explain your rating (Optional):

Are there any specific locations or areas in Worcester where active travel feels unsafe or difficult? (Optional)

Do you experience difficulties parking your bicycle?

☐ Yes

☐ No

What are the main issues?

- ☐ Lack of parking spaces
- ☐ Poor location of racks
- ☐ Security concerns
- ☐ Inadequate facilities
- ☐ Other (Please specify)

Do you experience difficulties transporting groceries or retail goods when using active transport?

- ☐ Yes
- ☐ No

What are the main challenges?

- ☐ Limited carrying capacity
- ☐ Weight of items
- ☐ Lack of equipment (e.g., baskets)
- ☐ Distance
- ☐ Other (please specify)

Appendix D - Flyer of Bike Worcester Survey QR Code

Distributed to the general public through social media posts and trifold place in local businesses



The flyer has a light beige background. At the top, the title 'Support Transportation Research!' is written in large, bold, brown letters. Below it, the text 'Let us know how you travel with our short survey' is in a smaller, dark teal font. In the center, there is an illustration of two people riding bicycles on a dark grey path that curves upwards from left to right. The person in front is a woman with long brown hair, wearing a brown jacket and dark pants, carrying a brown backpack. The person behind is a man with short brown hair, wearing a brown jacket and dark pants, also carrying a brown backpack. Below the illustration, on the left, is a large black and white QR code. To the right of the QR code is the WPI logo, which consists of a red circular seal with a building and the text 'WORCESTER POLYTECHNIC INSTITUTE' and '1865'. Below the seal, the letters 'WPI' are written in large, bold, red font. Underneath 'WPI' is the text 'in collaboration with' in a small, black font. To the right of this text is the University of Worcester logo, which is a blue shield with a white lion and the text 'UNIVERSITY of WORCESTER' in blue. At the bottom right, there is a dark blue rectangular box with the word 'BIKE' in white, bold, sans-serif font, and 'Worcester' in a smaller, white, sans-serif font to its right. At the bottom left, the website address 'wpi.org.uk/bikeworcester' is written in a black, sans-serif font.

Support Transportation Research!

Let us know how you travel
with our short survey



WPI

in collaboration with



UNIVERSITY of
WORCESTER



wpi.org.uk/bikeworcester

Appendix E - QR Code Customer Survey Questions

These questions will be distributed through QR codes, asking shoppers in the city centre to respond

1. How did you travel to {location} today?
 - a. Cycling
 - b. Walking
 - c. Car
 - d. Bus
 - e. Other (multiple choice)
2. How long does it usually take you to reach {location} from your residence?
 - a. 5 minutes or less
 - b. 5 - 10 minutes
 - c. 10 - 20 minutes
 - d. 20 - 30 minutes
 - e. 30 - 40 minutes
 - f. More than 40 minutes
3. How often do you use this transportation method to visit this store or business?
 - a. Daily
 - b. Weekly
 - c. Monthly
 - d. Other (Please specify)
4. Issues you face with active travel (Optional)

(Written response)

Appendix F - List of Shops

Name	Survey Accepted	Name	Survey Accepted
Balance	Y	Papa's cafe	Y
Black and White Kitchen	Y	Pasta Di Pizza	Y
Boston Tea Party	Y	Peter Cooks Bread	Y
Brittania Store	Y	Poppins Cafe	Y
Cafe Bolero	Y	Riverside Cafe	Y
Cafe Nero (the shambles)	Y	Starbucks	Y
Coffee warehouse	Y	Steam	Y
Colston Bakeries & Cafe Deco	Y	The Greyhound	Y
Costa Coffee	Y	The Priory	Y
Crowngate Shopping Centre	Y	The Twisted Spoon	Y
Ec&co Barber Shop	Y	Wayland's Yard	Y
Escape Hunt	Y	31 the Cross	Y
Everton's Wine Merchant	Y		
Gaumont Coffee Shop	Y	Best Kebab	N
King Convenience	Y	Cafe Nero (high st)	N
Kurd Barbers	Y	Card Factory	N
Mitchell and Butlers Spirits	Y	Greggs'	N
Movie Theatre	Y	Wetherspoon	N
Noosh	Y		

Appendix G - Guidelines for Observation of Transportation Behaviour

- Walking observation
 - Take note of the ways that pedestrians interact with other modes of transport
 - Take note of any safety issues or incidents
 - Take note of any pedestrian behaviours that are influenced by the behaviour of other modes; take into consideration visible hesitation or vigilance
- Biking observation
 - Take note of the ways that cyclists interact with other modes of transport
 - Take note of any safety issues or incidents
 - Take note of any cyclist behaviours that are influenced by the behaviour of other modes; take into consideration visible hesitation or vigilance
 - Observe the space that cyclists provide to pedestrians
- Driving observation
 - Take note of the ways that drivers interact with other modes of transport like pedestrians and cyclists
 - Take note of any safety issues or incidents
 - Take note of any driving behaviours that are influenced by the behaviour of other modes; take into consideration visible hesitation or vigilance

Procedure:

1. Choose three people to be observers. Start by assigning each of these people to be either a walking observer, biking observer, or driving observer
2. Each observer pays attention to the mode of transport that they were chosen to focus on and follows the guidelines outlined above.
3. After a period of 17 minutes from the start of the current observation trial, the observation roles rotate and a new trial starts
4. Repeat steps 2-4 and stop when all roles have been filled by each person

Appendix H - Surveying Retailers and Bike Worcester Members

This survey is for the general public with a focus on people who already use active transport to get data on negative and positive barriers around Worcester UK.

1. What is your primary mode of transport when travelling to retail stores or businesses?

A) Car B) Train C) Bicycle D) Walking E) Bus E) Other

2. What factors most influence your choice of transport to retail stores or businesses?

(Select all that apply)

A) Weather B) Distance C) Carrying goods/shopping D) Travel time E) Cost F) Safety G) Other (please specify)

3. In your opinion, what are the main causes of unsafe travel in Worcester? (Select all that apply)

A) Motor vehicle traffic B) Lack of dedicated walking/cycling paths C) Poor condition of walking/cycling paths D) Poor lighting/visibility E) Other (please specify)

4. How would you rate the connectivity of walking and cycling paths in Worcester?

(1 = Very poor, 10 = Excellent)

Scale: 1 2 3 4 5 6 7 8 9 10

4a. Please explain your rating:

(Optional - open response)

5. Are there any specific locations or areas in Worcester where active travel feels unsafe or difficult?

(Optional – open response)

6. Do you feel safe when using active transport (walking or cycling)?

A) Yes B) No C) Sometimes

6a. Please explain your answer:

(Optional – open response)

7. Do you experience difficulties parking your bicycle?

A) Yes B) No

7a. If yes, what are the main issues?

A) Lack of parking spaces B) Poor location of racks C) Security concerns D) Inadequate facilities E) Other (please specify)

8. Even when using a lock, do you feel bicycle theft is still a concern?

A) Yes B) No C) Unsure

8a. Please explain why:

(Optional – open response)

9. Do you experience difficulties transporting groceries or retail goods when using active transport?

A) Yes B) No

9a. If yes, what are the main challenges?

A) Limited carrying capacity B) Weight of items C) Lack of equipment (e.g., baskets) D) Distance E) Other (please specify)

Appendix I - Interviewing Bike Worcester Leadership

These interview questions are for Bike Worcester Leadership to collect data on research they have performed and data on aspects they have encountered while being a part of Bike Worcester.

1. What are the most common safety concerns reported by cyclists and pedestrians in Worcester?
2. Are certain areas in Worcester consistently identified as high-risk for active travel?
3. Has bicycle theft increased or decreased in recent years?
4. Does theft appear to reduce long-term ridership, based on what you've observed?
5. Are there particular areas in Worcester where theft is concentrated?
6. Where are the largest gaps in Worcester's cycling and walking network?
7. Are there specific routes that residents frequently request improvements for?
8. How effective have recent infrastructure projects been in improving safety or ridership?
9. In your opinion, what is the single most important infrastructure improvement Worcester could make?
10. Does limited bike storage on buses or trains act as a significant barrier?
11. Are there any ongoing discussions about improving bike-bus or bike-rail integration?
12. Have active travel rates in Worcester increased, decreased, or remained stable in recent years?
13. What trends in your data concern you the most and what trends are encouraging?
14. Are there policies from other UK cities that Worcester should consider adopting?
15. How effective are current local policies in promoting active travel?
16. If funding were unlimited, what would you prioritize first?

Appendix J - Interview Questions for Bike Worcester

These interview questions are designed to be used with Bike Worcester members and volunteers to gain insights into issues on specific routes and reasons for choices of transportation.

1. What motivates you to choose cycling when making trips to shops or the city centre?
2. What factors discourage you from cycling for shopping trips, even if distances are short?
3. How do convenience, time, and cost influence your decision to cycle vs drive?
4. What do you think motivates other people to drive instead of cycling for shopping trips?
5. What change (e.g., infrastructure, policies, facilities) would most motivate more people to cycle to shops?
6. How do safety perceptions influence your willingness to cycle in the city centre?
7. Does the need to carry shopping affect your motivation to cycle? In what ways?
8. How does the availability of bike parking or fear of theft influence your decision to cycle?
9. Are there particular routes or areas that make you feel more or less motivated to cycle? Why?
10. Are there any issues that you have had with biking at specific locations? These could include problems with infrastructure or traffic.

Appendix K - Survey Questions for Business Owners Distributed through Email

For the local business owners who are unable to do an interview, they can fill out this survey to provide their general perception about customers walking and biking.

Select All That Apply:

1. How would you categorize the products or services sold or offered in your business?

☐ Restaurant/Cafe/Pub ☐ Clothing ☐ Household ☐ Entertainment ☐ Other: _____

2. How old are your main customers (in years)?

☐ Under 16 ☐ 16-24 ☐ 25-34 ☐ 35-49 ☐ 50-64 ☐ 65-74 ☐ 75+

3. What form of transportation do you think your customers primarily take to your shop?

(a) Walking (b) Biking (c) Driving (d) Bus (e) Other, _____

4. Do you think a customer's choice of transportation has an influence on your sales?

(a) Yes (b) Maybe (c) No and please elaborate why.

5. Do you notice a difference in the number of customers and sales you have when the weather is poor?

(a) Yes (b) Maybe (c) No and please elaborate why.

6. Do you think customers have any concerns about walking or biking to local businesses?

(a) Yes (b) Maybe (c) No and please elaborate why.

7. How often do you use the following forms of transportation? (Optional)

	Daily	Weekly	Monthly	Never
Walking	☐	☐	☐	☐
Cycling	☐	☐	☐	☐
Driving	☐	☐	☐	☐
Other 	☐	☐	☐	☐

Appendix L - Interview Questions for Business Owners

These interview questions are for local business owners and the goal of these questions is to gain insight into their thoughts and opinions on customers biking and walking to their establishments.

1. How did your business get started?
2. Who is your target audience and who are your primary customers?
3. What form of transportation do you think your customers primarily take to get to the city centre? And your shop?
4. Do you think a customer's choice of transportation has an impact on the sales in your shop?
5. Do you have any concerns about customers using walking or biking? Do you think customers have any concerns about walking or biking to local businesses?
6. When do you get the most amount of business throughout the day?
7. What time of year do you get the most amount of business?
8. Do you notice a difference in the number of customers and sales you have when it is raining or there's poor weather?
9. Would you support initiatives that promote walking or biking to local businesses?

Chapel & Friary Walk

Worcester

20/04/2026

Dear Retailer,

We are supporting a local research project that aims to better understand how customers travel to businesses across Worcester, and how this impacts trade, accessibility, and future opportunities for growth.

This survey is being carried out by a student research team from Worcester Polytechnic Institute (Massachusetts, USA), in collaboration with Bike Worcester and the University of Worcester.

Why this matters to you:

The research is focused on your business—how your customers currently travel, what challenges they face, and how improvements in areas such as parking, walking, and cycling could help increase footfall and customer engagement.

Your feedback will:

- Help shape understanding of customer behaviour in Worcester
- Highlight any barriers affecting your business
- Contribute to future initiatives that may support increased visits and spend

We would really appreciate you taking a few minutes to complete the survey using the link below:

www.wpi.org.uk/business



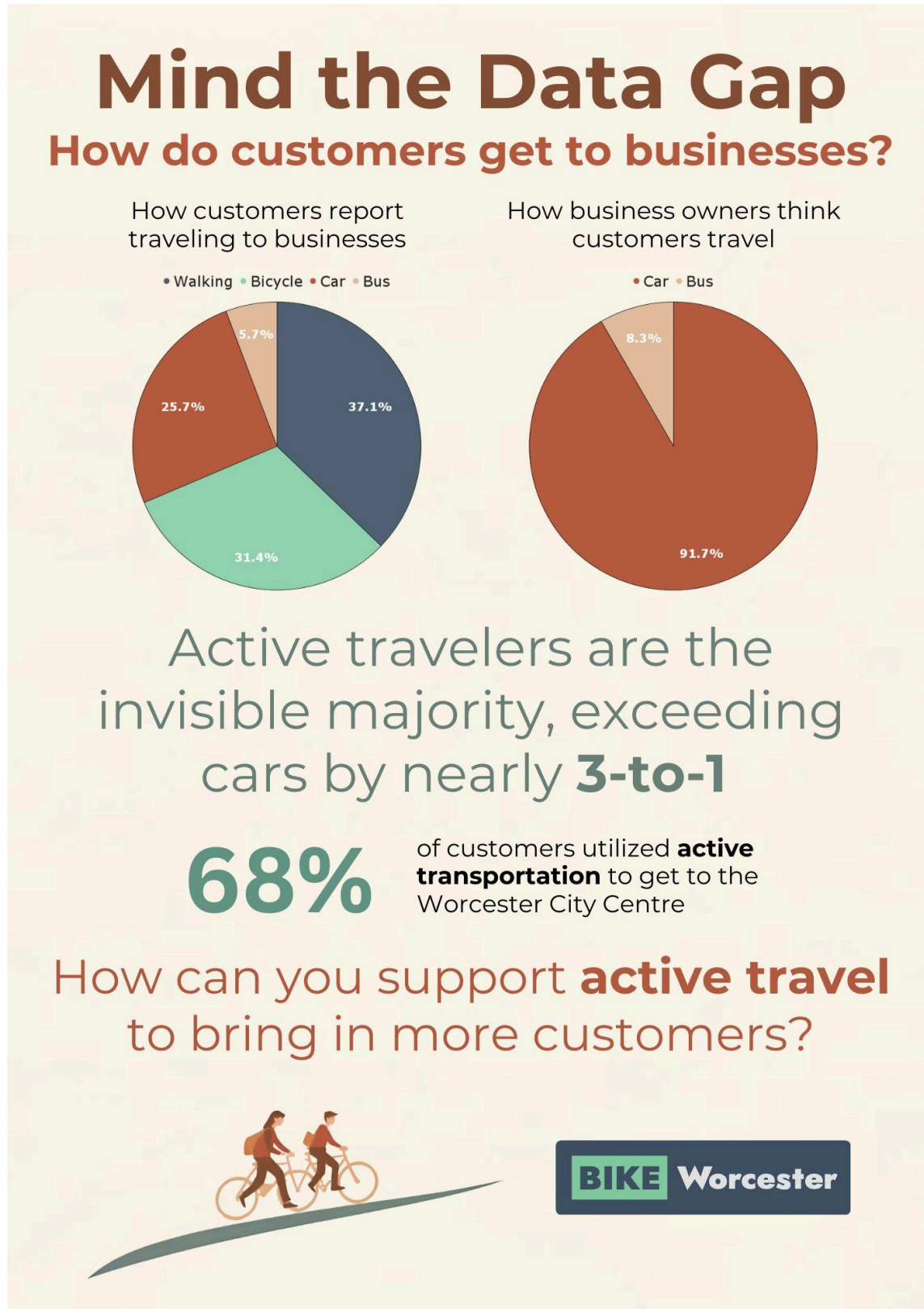
All responses are confidential and will be used purely for research purposes.

As always, we encourage our retailers to engage with opportunities that may positively influence the future of trading in Worcester, and this is a valuable chance to ensure your voice is heard.

If you have any questions, please feel free to contact me directly.

Many thanks for your continued support.

Kind regards,



Share the Road Slow the Go



Vehicle-Cyclist Close Passes in Worcester, UK

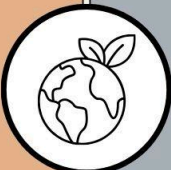
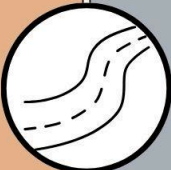
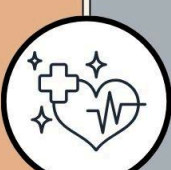
**Vehicle traffic is the
#1 concern among
pedestrians and cyclists**



**Look out for
each other and
pass safely!**

BIKE Worcester

Appendix P - Infographic 3: Fact Sheet

Driving	VS	Cycling
Petrol, insurance, parking		Relatively low costs
Inspections, annual maintenance		Low maintenance, fix as required
High emissions, increased air and noise pollution		No emissions, air or noise pollution
Uses more space on roads, requires large parking space		Takes less space than a car, easy to store
No health benefits		Helps improve health, reduce risk of chronic disease