The background is a vibrant yellow. It is decorated with several abstract geometric shapes in shades of blue and teal. These include circles, semi-circles, and rounded rectangles, some of which are partially cut off by the edges of the page. The shapes are arranged in a way that creates a sense of movement and depth. The text is positioned in the upper left quadrant of the page.

Appendix A10.2
The Economic Impact
of the Core Bus Corridors

The economic impact of the Core Bus Corridors

06 October 2021 | Version 1.0



Building a better
working world

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1 Executive Summary

This report assesses the likely impacts of the infrastructure works along the proposed Core Bus Corridors

Scope

As part of the proposed development of the BusConnects project, the NTA intends to undertake a number of infrastructure works. Alongside the work to construct dedicated bus lanes, the NTA will also construct additional walking and cycling infrastructure and further improve other elements of the public realm (such as street furniture and signage).

As part of the work to develop the Environmental impact assessment, EY has been commissioned by the NTA to assess what the economic impact of these infrastructure works will be on the communities along the route.

This economic assessment seeks to establish both the positive and negative economic impacts that communities will experience as a result of the infrastructure work. It considers factors such as commercial activity, health, social integration and crime.

This report provides the conclusions of this assessment.

Approach

This assessment has been undertaken on the basis of a review of published literature, both academic papers and wider reports and briefings provided on relevant projects globally. Projects such as the proposed investments have been undertaken in a wide range of countries and as a result there is a large body of literature available.

As such, this report sets out the lessons which can be learnt from other similar projects, both positive and negative. These reports have been used to identify key impacts which are relevant to the communities along the proposed routes.

All of the literature used for this study is publicly available, and links can be found to all papers in the Appendix.

The impact has been considered across three time periods:

1. The short run: Impacts during the construction of the works themselves
2. The medium run: Impacts in the period just after the BusConnects lines begin to operate
3. The long run: Impacts over the longer term as communities adapt to the new travel options

A number of relevant caveats should be noted:

1. As this review is based on an evidence review, it does not seek to review the impact of each individual corridor separately.
2. This assessment is based on international published evidence and is not based on a review of socio-economic data along the corridor itself.
3. Only reviews available publicly available online and in English were considered as part of this assessment.

The evidence suggests the infrastructure work will improve the public realm along the routes with positive impacts on businesses and individuals along the corridors

The literature review has identified a number of mechanisms by which the proposed infrastructure works will impact on communities along the route. Whilst there are a number of potential negative impacts, the majority of the evidence suggests the net impact will be positive.

Local businesses	Public realm	Health and wellbeing	Social cohesion	Adapting to the future
<ul style="list-style-type: none"> ✓ Commerce: Local commercial opportunities and sales have been shown to improve following similar investments in other countries ✓ Car Parking: Transforming car parking into bike parking can increase sales due to the higher number of overall visits to the shops ✗ HGV Loading: Difficulties in HGV/Commercial vehicles loading and unloading can impact businesses unless mitigation is put in place to address this ✗ Construction works: The construction works may disrupt businesses, though there is no evidence of anything other than temporary impacts 	<ul style="list-style-type: none"> ✓ Improved public realm: The works will improve the overall public realm along the lines with similar improvements elsewhere leading to increased value of shops, with retail rents rising due to improved commercial opportunities ✓ Improved outputs: Better public spaces can also lead to increased outputs and additional jobs in retail and leisure businesses ✗ Gentrification: There is an increased risk of lower income residents being driven out of areas due to rent increases, though this may be offset by the improved opportunities discussed in the social cohesion section. 	<ul style="list-style-type: none"> ✓ Walking and Cycling: The improved infrastructure will encourage more walking and cycling, as road safety fears are often the main reason people do not cycle ✓ Health: A wide range of both mental and physical health benefits ✓ Productivity: Improved activity levels can also lead to work place benefits such as improved productivity and reduce absenteeism 	<ul style="list-style-type: none"> ✓ Improved transport: The new bus routes will provide improved access for all families. Those on low income or with disabilities will, in particular, gain through improved transport options and less need to spend on car travel ✓ Better jobs: This will give all households along the routes access to wider and better job opportunities which in turn can lead to better mental and physical health ✓ Better access: They will also see improved access to services across Dublin ✓ Reduced crime: Improved bus stops and infrastructure such as street lights has been shown to reduce crime 	<ul style="list-style-type: none"> ✓ Sustainability: The BusConnects infrastructure works link into a longer term trend towards more sustainable transport modes ✓ Shopping close to home: The need to be more sustainable is driving people to want to shop closer to home, which will be supported by the proposed investments ✓ Working from home: Whilst it is still anticipated that individuals will continue to regularly travel into the office, the desire to work more from home is likely to require shorter trips to local community centres and shops.

The majority of impacts will be felt over the medium to long run, with the short run impact more uncertain due to a lack of research into this time period

Short Run:

The construction phase

There is very little evidence to assess the impacts on the communities during the construction of such projects as most reviews focus on the impacts once the project is in operation. Reviews and surveys undertaken before projects have begun have shown that concerns around loss of business and the impact on the community are particularly common concern ahead of such projects. Whilst in many of the projects reviewed, businesses did comment on the impact of disruption on their businesses, in particular access for HGVs and other commercial vehicles, all studies showed that after the works had been completed businesses found that their concerns had not been realised. None of the reports provided any suggestion that businesses stopped trading as a result of the works and in fact there is evidence that the improvements have led to more businesses starting up as a result.

Medium run

Immediately after opening the corridor

All of the evidence reviewed shows that all of the businesses along the routes can expect to see improved commercial opportunities once the new infrastructure is in place. This investment will lead to increased walking and cycling and the evidence shows that any loss of business through less customers arriving by cars is more than compensated for by increased numbers of customers arriving by more sustainable modes of transport. The evidence suggests that all businesses along the routes, regardless of size or location, should gain additional footfall as accessibility and attractiveness will both be improved. There are likely to be some negative impacts for businesses along the routes due to issues with loading and unloading HGVs and other commercial vehicles, which will need to be mitigated, however the evidence suggests that this issue did not lead to major commercial issues for businesses along similar developments in other countries.

There is also a body of evidence which shows that there will be a wide range of additional benefits to the communities along the routes. The new infrastructure will attract all social groups to make better use of public transport and will be important for social cohesion. In particular, low income households and individuals with disabilities will gain better access to services and improved job opportunities. There will also be positive impacts on crime and anti-social behaviour due to improved lighting and better bus stops.

Long run

Once the corridor is well established

The benefits to the community will continue to grow over the long term as people adapt to the new infrastructure. Health benefits in particular will be felt over the longer run as the increased levels of walking and cycling lead to improved health benefits. Evidence shows that these health benefits are felt not only by the individuals concerned but also by the businesses that they work for (due to reduced absenteeism and improved productivity).

These investments will also support the longer term trends in a move towards more sustainable transport choices, driven by an increased awareness of environmental considerations. This, alongside the impact of Covid-19, has driven a desire to shop closer to home and to choose more environmentally suitable modes to reach these shops. There may, however, be some negative impacts on communities due to the potential for negative impacts of gentrification. Evidence suggests that improved public spaces can lead to increased house prices and rents (including for shops) which may counteract some of the positive social cohesion benefits mentioned above.

The background of the slide is a blurred photograph of a cable-stayed bridge with a white pylon and numerous stay cables. The bridge spans across a body of water. In the background, there are modern buildings with glass facades. The overall scene is captured with a long exposure, creating a sense of motion and blur.

2

The impact on local businesses

Businesses along the corridors are not likely to see reductions in footfall, despite likely reductions in general traffic along the proposed corridors

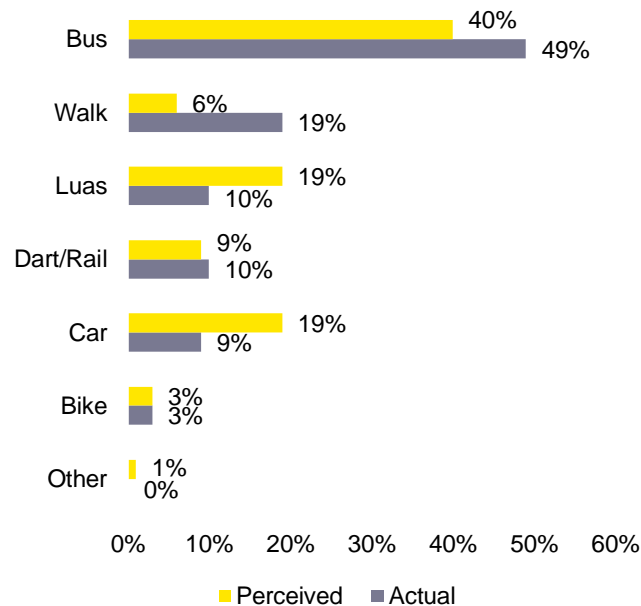
Public transport options impact on footfall

Businesses tend to over estimate the impact of cars on their business, believing that more people come via cars than in reality. This conclusion is supported by a study undertaken in Dublin¹ which interviewed 1,009 shoppers on Grafton Street and Henry Street seeking to identify whether there are any differences between how they actually travel to these shopping streets versus what shop owners perceive. Traders on these two main shopping streets considerably over-estimated the number of shoppers travelling by car and Luas while significantly underestimating the proportion of bus passengers and pedestrians.

The results for Henry Street are shown to the left. As can be seen, traders overestimated the number of people arriving by car by 10 percentage points. At the same time they underestimated the number arriving by foot by 13 percentage points. A very similar result was found for Grafton Street. The report concluded that further investment in public and sustainable transport was warranted and that shoppers would be attracted by an improved public realm and better public transport.

This result is not just found in Dublin, or indeed in large city centres. For instance, in Waltham Forest², a smaller area of north-east London, similar results were observed. Shop owners perceptions were that 63% of shoppers came by car, however, visitors indicated that only 20% travelled by car. Businesses also underestimated the number of customers arriving by public transport or on foot, estimating a figure of 41% and 49%, respectively.

Perceived v Actual modes of transport to reach Henry Street



Source: Dublin Institute of Technology ¹

In reality, these modes of transport were substantially higher with 54% of customers using public transport and 64% of customers arriving by foot.

Additional evidence has also been observed in global locations such as:

- ▶ San Francisco³ – Business owners in San Francisco’s major retail and entertainment centres believed their patrons primarily came by car.

A survey found that the majority of travellers get to downtown San Francisco by either taking transit or walking, with the belief that recreational customers predominantly travel by car not being supported by the data.

- ▶ Copenhagen⁴ – Almost two thirds of all shopping trips to Frederiksberg shopping streets arrive by bike (38%) or on foot (36%) with visitors by car only accounting for 15%.

Conclusion

Evidence from studies in Ireland and internationally suggest that reductions in the numbers of car journeys to the shops should not lead to a reduction in footfall as traders typically overestimate the importance of cars. Many shoppers are already arriving using sustainable transport options and therefore should be quick to take advantage of new transport options. There may be some disruption to business during the construction phase, however once the new routes are open footfall should return to normal and may in fact rise (see next three pages).

There is likely to be increased commercial opportunities and improved sales for the majority of impacted businesses

Increasing sales

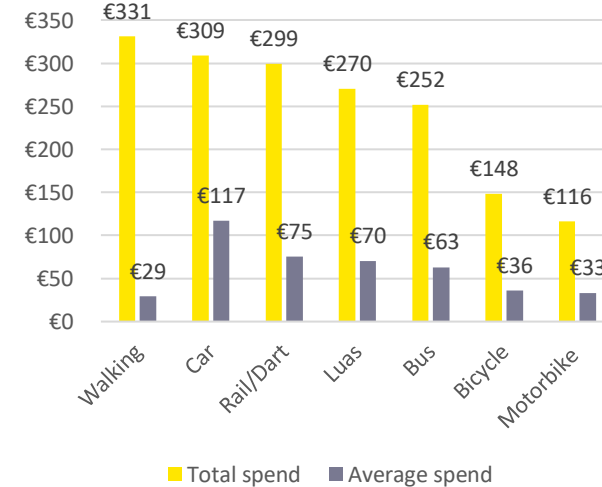
Research has been undertaken into how much people spend in shops, based on the mode of transport used to reach the shops, which helps to assess the impact of a shift to more customers arriving by public transport, foot or bicycle. This research allows for a calculation of the total impact on sales of such measures.

Evidence suggests that those travelling to shops via car spend on average more per trip⁵, as can be seen in the graph to the left. However due to the frequency of visits by bus, bike or walking, the average total spend is much higher for this cohort. As such, local businesses could benefit financially from greater access to customers through these modes of transport.

This was demonstrated in the same study as discussed on the previous page.⁶ The frequency of trips were found to be far higher for public transport and the non-motorised transport modes of walking and cycling in comparison to cars. On an individual shopper basis, walkers were found to spend the most in shops, €22 more in a four week period to those who travelled by car (see graph to the left).

In order to calculate the total spend per mode of transport the study calculated the number of shoppers by mode of transport and multiplied this by the average spend. This showed that shoppers arriving by bus were the most lucrative cohort overall, responsible for 38% of total expenditure. This was followed by walking at 17% and car at 15%.

Average and Total spending (4 week period) by mode of transport (2014)



Source: Millward Brown

A further study in 2012 confirmed this finding by examining the impact of reduced car parking across a range of London⁷ local centres. From both an analysis of existing academic research and through a questionnaire issued to businesses across all London boroughs, it concluded that car drivers spend more on a single trip while walkers and bus users spend more over a week or a month.

Specifically, walkers spent £147 more per month than those travelling by car, with spending by public transport users and walkers on the rise since 2004 while spending by car users decreasing since.

“For retailers, a good-quality public environment can improve trading by attracting more people into an area. It has been shown, for example, that well-planned improvements to public spaces within town centres can boost commercial trading by up to 30 - 40 per cent and generate significant private sector investment”⁸

Conclusion

There is strong international evidence to suggest that the proposed improvements will lead to further increases in the use of sustainable transport. This should, in turn, more than compensates for reductions in visits by car users. Whilst spend per visitor may fall slightly, the overall spend rises due to the increased overall footfall. This effect should occur as soon as the new proposed routes open with shoppers choosing to make even more use of sustainable transport decisions. Whilst there is limited evidence of the impact during the construction work, none of the evidence suggested an increase in business insolvency or a departure of businesses from the area during construction works.

The removal of parking spaces is unlikely to have a negative impact on businesses

Transforming parking spaces

Evidence shows that businesses often raise concerns around the loss of parking spaces ahead of proposed public transport or bike lanes schemes (see for instance the Bloor Street case study on page 33). However, evidence shows that swapping car parking for bicycle lanes and parking can have a positive impact on commercial opportunities.

The provision of more dedicated cycle lanes can help to reduce traffic and mean that roads become safer, encouraging more people to cycle. For example, 81% of Londoners said they could cycle, including 3 in 4 people aged over 65⁹ and the main reason for not cycling is the perceived danger from cars.¹⁰

The impact that additional bike usage can have on commercial districts across a city was studied in a review of the economic impact of visitors to commercial districts across New York City¹¹ In this study it looked at areas that had car parking converted to bike parking (in this case for a bike sharing scheme). The authors examined reported usage patterns of bike stations in 7 different neighbourhoods across New York City and compared the shopping activity that is related to car usage and bike activity. The results found that the conversion of a given parking space from car use to bike parking produced an average of 14.7 bike trips per day out of a given 20 feet of curb space. Estimates indicate that the conversion of a paid parking spot (20 feet of curb space) to a bike share facility has the potential to increase the total commercial spending from \$219.65 dollars a day (based on 8 turnovers per space per day) to \$334.06 dollars per day. This is driven by the increased frequency of movements in and out of the bike share facility and is somewhat offset by the slight difference in spending patterns by mode of travel. This impact was seen across all of the communities assessed showing that the impact wasn't just felt in the heart of New York City. Whilst the growth in sales value will have been driven by the overall size of New York City, the change between parking and bike spend shows that increased bike space can benefit a wide range of communities.

The University of Birmingham¹² was commissioned to provide a review of the literature on the value of cycling. The paper found that per square metre, bicycle parking delivers 5 times higher retail spend than the same area of car parking and that a compact town optimised for walking and cycling can have a "retail density" (spend per square metre) 2.5 times higher than a typical urban centre.

In addition, an inner city Melbourne¹³ study found that while car users averaged more overall spending per hour than bike riders, the small area of public space required for bike parking means that each square metre allocated to bike parking generated \$31 per hour, compared to \$6 generated for each square metre used for a car parking space.

Conclusion

The construction of the new infrastructure, including cycle lanes, will result in the loss of commercial parking along the routes, however all of the evidence suggests that this will not lead to a loss of business. In fact the reverse has been shown to occur in other countries, with more cyclists visiting a range of shops more often and spending more when suitable bike parking is made available. This does not appear to be only linked to major city centres, with many studies looking at a wide range of communities along transport routes. Increased safety due to reduced car traffic and protected cycle routes, alongside increased parking spaces for bicycles, should encourage a rapid shift to walking and cycling for all age groups.

Footfall could increase as local people are attracted to spending more time in community centres

The impact on town centres

The evidence suggests that footfall is likely to rise following infrastructure improvement works due to an overall improvement in the quality of community centres. A UK report¹⁴ that looks at the link between sustainable transport and development suggests that community centres are more likely to thrive if they are accessible, pleasant to walk around and spend time in, and have a good range of shops. This is because centres which are busy with traffic attract less people to spend time walking around and browsing. The paper also found that places which are easily accessible by public transport or bike, and easy to get around on foot coped much better with the 2008 recession.

In 2016, the EU¹⁵ conducted a review of the evidence surrounding the economic benefits of sustainable mobility. The evidence found suggests that there are several links between economic activity and increased pedestrians in town centres. In particular, a review of the evidence concluded that;

- ▶ Car access restrictions (alongside increased pedestrianisation) can bring considerable benefits to towns and cities, while pedestrianising shopping streets tends to increase retail revenues and the value of property on those streets.
- ▶ Traffic calming coupled with public realm improvements in mixed use shopping streets increases pedestrian flows on those streets. There are some indications that this might also benefit retailers in those streets.
- ▶ Leisure-based networks can also bring benefits in respect of new job creation and additional economic activity

A good quality public environment in towns and villages, facilitated by easy access, can improve trading by attracting more people into an area. For example, in Coventry¹⁶, improved pedestrianisation, a new civic square, clearer signage and better placement of street furniture have made the city centre a more attractive place to be. As a result, footfall in the town centre has risen by 25% on Saturdays, benefiting local trade. In addition, well-planned improvements to public spaces within town centres can boost commercial trading by up to 40% and can in turn generate significant private sector investment.

Conclusion

By creating easy access to local village centres and reducing the level of car traffic in these areas, more people will be attracted to the area and also spend a longer amount of time in each visit. As a consequence, this is likely to have a positive impact on all local businesses along the routes, regardless of size or location. It will also create a nicer atmosphere and a greater sense of community. This impact will be rapidly felt and communities should begin to benefit as soon as the new infrastructure works have been completed.

The background of the slide is a blurred photograph of a city street. In the foreground, a bus is moving from left to right, creating horizontal streaks of yellow and blue. In the background, a cable-stayed bridge with a white arch and numerous cables is visible against a blue sky. A modern building with a glass facade is also partially visible.

3 Developing the public realm

Improvements may increase the value of residential and retail properties

The impact on property values

The term 'public realm' can refer to a wide range of areas which the public has access to, for example roads, streets, lanes, parks, squares, bridges and open spaces. By definition it includes the publicly available space between buildings, along with the spaces and the buildings or other structures that enclose them. As part of the infrastructure works, the NTA intends to invest in a number of public realm improvements such as improved street furniture and lighting.

In addition to the benefit of improvements to public realm creating nicer places for people to live and pass through, such improvements can lead to an area increasing in value. Evidence from a study in London¹ shows how it is possible to calculate the extra financial value that good street design contributes, compared to average or poor design.

The study assessed the design quality of a range of different high streets (10 in total were used as case studies) using the Pedestrian Environment Review System (PERS), a tool for measuring the quality of the pedestrian environment. PERS scores the way a street works as a link, facilitating movement, and as a place in its own right. The results show a direct link between street quality and residential property prices. For homes on the case study streets, improvements in street quality were associated with an increase in prices. Specifically, for each single point increase in the 'PERS' street quality scale, a corresponding increase of £13,600 in residential prices could be calculated. This equates to a 5.2% increase in the price of an apartment for each PERS point.

The analysis also showed a direct link between retail rents and street quality. For each single point increase on the PERS street quality scale, a corresponding increase of £25 per square metre in rent per year could be calculated. This equates to a 4.9% increase in shop rents for each PERS point. These rises in rents were seen as a result of the increased commercial activity discussed in Section 2, meaning that both the retailer and the owner of the unit gain from improved public realm.

Alongside these direct measures of value the research also included another assessment method – stated preference surveys. These were used to ascertain the benefit to the public from better quality streets. The survey showed that, on average, pedestrians were willing to pay more for better streets. Local residents were willing to pay more council tax, public transport users would accept higher fares and people living in rented homes were happy to pay increased rents to improve the quality of their high streets.

Conclusion

The public realm improvements planned by the NTA may lead to an increase in value of both residential and retail property prices, especially in the community centres along the corridors. Evidence shows that investing in public realm creates nicer places that are more desirable for people and business to locate in, thereby increasing the value of properties in the area. The evidence suggests that all public realm improvements generate value, regardless of the size of the investment or the neighbourhood. Residents along the corridors will also see a measurable increase in their quality of life, with evidence showing that residents are willing to pay more for an improved public realm.

Increased house values can lead to increased gentrification

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Public realm improvements can lead to gentrification

Although public realm improvements are a very positive investment to communities, there can sometimes be other impacts that should be considered. Many local governments will invest in public realm to stimulate regeneration, reduce a socio-economic decline or degradation of the physical environment. While it is assumed that the local residents will benefit from these investments there can be an unintended impact called gentrification. Gentrification is the process by which a lower income area is transformed by high income households moving in, often leading to the displacement of the original families.

The process of gentrification is outlined in a paper produced by the UK centre for local economic growth². As a result of public realm improvements in a community, the area will become a more attractive place to live and this may result in higher property prices. This can be seen to represent a positive outcome as the objective of the public realm intervention was to boost the economy of an area.

However, as the values of properties rise in a given area, wealthier people are more likely to be attracted to the area, move in and also attracting new businesses, often displacing current inhabitants by competing for finite quantities of homes. As a consequence, lower income households may see rents rise and could potentially no longer be able to afford that location. This paper found that lower income residents may also be negatively effected if this process displaces the shops favoured by the original residents. This affect can be self reinforcing as the changes to the amenities further attract new residents.

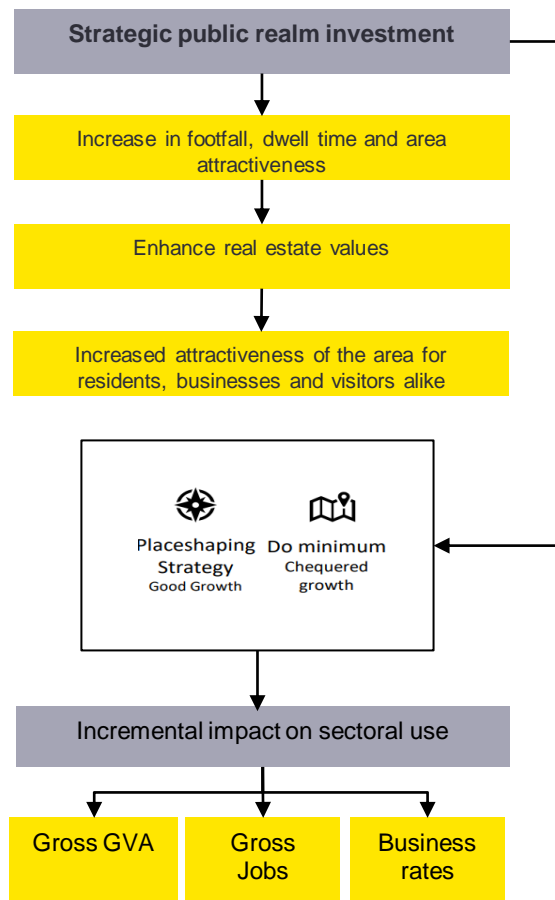
Gentrification has been shown to have both positive and negative impacts on the communities and the health of the people living in those communities. Research in the USA³ suggested that it could have negative impacts through disrupting social networks, increasing stress, increasing costs of living and increasing cultural displacement, but that it could also have positive impacts through reductions in crime, additional economic activities and improved facilities. The overall impact on the original residents was found to depend on whether they remained in the original area or not. It found little evidence of low income renters moving home purely due to gentrification.

Conclusion

Gentrification can be a mixed blessing, with both positive and negative impacts on the communities which are impacted by it. The underlying improvements which drive gentrification may have positive impacts on communities, however it can result in certain groups in society being marginalised. This can risk undermining the benefits that the infrastructure works bring to health and well-being as well as social cohesion (and which are discussed in the next two sections). The proposed changes are significantly smaller and may be less likely to lead to a step change in the gentrification of an area. The investments will be a number of smaller changes which will improve local community centres and shopping locations along the routes rather than developing new public realm infrastructure such as parks. This, combined with the evidence from the USA of renters typically not being driven out of areas by gentrification, means that it is not considered likely that these investments will lead to a major negative impact on lower income residents along the corridors, or be enough to offset the significant positives that residents will experience. Any impact which does occur is likely to occur over the long term as gentrification tends to be a long term process over many decades.

The value created by these improvements will benefit local economies through improvements in economic conditions

Economic model for assessing the impact of public realm investments



Source: Heart of London Business Alliance

Improvements in public realm can lead to a stronger local economy

As previously set out, public realm improvements can have a positive impact on the attractiveness of an area. In turn, the land values of both commercial and residential properties are enhanced, as well as the commercial opportunities for local service businesses. This creates an environment conducive to economic development and growth. One such paper estimates the potential economic impact of public realm investment in London⁴. The model estimates that investments in public realm combined with a placemaking strategy could generate benefits to business, land owners and the public sector.

This research found that in the period 2019 – 2030 an improved public realm could create an addition 2,510 Full Time Equivalent jobs, in comparison to what would have happened without these investments. It was also predicted to add £400m to GDP over the same time period. The model used to assess this valuation is set out to the left. This impact was also observed during the development of Bromley town centre (see case study on page 34).

In a further study commissioned by the UK Department for Communities and Local Government⁵, an analytical framework was designed to value the benefits of regeneration and how they compare with the relevant costs.

A benefit to cost ratio was established for various types of regeneration. In particular, a monetary value for the benefit of environmental open space was established. Under a central valuation scenario, for every €1 invested in open spaces a return of €2.70 is generated to society. These economic benefits were determined through the use of a survey and included improved perceptions of local amenities and improved aesthetic qualities of town squares, pedestrian streets and landscaping in public areas. This study was undertaken across a wide range of different schemes in the UK, meaning that the results are not only valid for large central city developments.

Conclusion

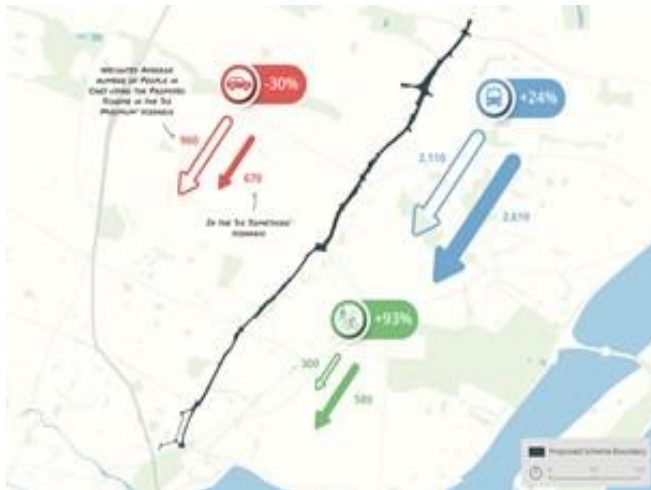
Improvements in the public realm will generate economic benefits to all those who live along the corridors. The developments do not need to be large scale city centre investments in order to deliver benefits. The additional footfall (discussed in Section 1) will be complimented by the additional benefits generated due to an improved public realm. These will compliment each other and should lead to additional economic output, jobs and wages. It will also generate wider economic benefits in terms of public realm spaces which are more attractive and pleasant to be in. These benefits have been shown to be delivered rapidly following the completion of the previous public realm improvements.

The background of the slide is a blurred photograph of a city street. In the foreground, a bus is moving from left to right, creating horizontal streaks of yellow and blue. In the background, a cable-stayed bridge with a white pylon and numerous cables is visible against a blue sky. A modern building with a glass facade is also partially visible.

4 Community health and wellbeing

New bus and cycle lanes will encourage additional walking and cycling, leading to more sustainable transport decisions

Traffic impacts on Clongriffin to City Centre Scheme



Source: NTA

Sustainable Transport choices

One of the key benefits to the development of the BusConnects project, and especially the infrastructure work, will be that it encourages more sustainable transport choices. Demand estimates have been developed by the NTA and an example of this is shown to the left. This work shows that along the Clongriffin to City Centre Scheme, walking and cycling will increase by 93% and bus journeys by 24%.

Additional foot journeys

Additional foot journeys will be driven via two mechanisms:

1. Additional footfall around commercial centres. This is discussed in section 2.
2. Additional foot journeys to access public transport. As people swap from cars to BusConnects they will walk to and from the bus stops each day (and potentially between buses), thus getting additional exercise even if they use the Bus for the majority of the journey.

Additional cycling

The infrastructure works will have a major impact on cycling. The development of dedicated cycle lanes will not only make cycling safer, but will also increase the perception of safety. When a cycle lane was introduced in Bloor Street (Toronto, Canada), 85% of cyclist stated that they felt safer¹. Fear of accidents is the main factor which prevents more people using bicycles.

A UK report² found that 61% of people surveyed agreed with the statement “it is too dangerous for me to cycle on the roads”, however 53% agreed with the statement “I would cycle more if there were more dedicated cycle paths”. The same study found that 90% of respondents were capable of cycling and 92% reported learning as a child.

Conclusion

Walking and cycling infrastructure developed as part of the proposed improvements should lead to an increase in the use of sustainable transport modes by offering new and safer alternatives to the use of private vehicles. These impacts will occur as soon as the new facilities are opened and the evidence suggests that people should rapidly swap to new transport choices.

Increased walking and cycling has been shown to have significant mental and physical health benefits

Impact on community health

The development of new walking and cycling infrastructure will have a positive impact on the health of all those along the corridors who walk and cycle more as a result of these improvements.

“Access to good-quality, well-maintained public spaces can help to improve our physical and mental health by encouraging us to walk more, to play sport, or simply to enjoy a green and natural environment. In other words, our open spaces are a powerful weapon in the fight against obesity and ill-health”³

Currently 62.3% of all men and 46.4% of all women aged over 18 in Ireland are classified as overweight or obese.⁴ This is above the EU average of 60.0% and 45.7% respectively. Obesity has been shown to have a wide range of negative health impacts such as diabetes, heart disease, strokes and some forms of cancer. It has also been linked to poor mental health and reduced quality of life.⁵ In addition, the Healthy Ireland 2019 survey found that only 46% of the population is considered to be achieving the minimal level of physical activity required for a healthy lifestyle.⁶

Encouraging walking and cycling has been demonstrated to have direct medical benefits through promoting a healthier lifestyle and reducing obesity. Analysis undertaken in the UK found if exercise levels increased each week by a combined 30 minutes of cycling and 30 minutes of walking, there would be an annual reduction of around 6,100 deaths.⁷ The same report also found that those who rated a public transport system as “good” rather than “poor” were three times more likely to access health care services and slightly less likely to report feeling under strain, being dissatisfied with life or having poor mental health.

This can also impact on health inequalities across different socio-economic groups. A UK study found that deprived inner city areas had five times less good quality green spaces than more affluent areas and that this contributed to increased vulnerability to “heat island” affects, increased risk of asthma, heart disease and dementia. Areas with poor access to good green spaces were found to have lower levels of physical activities and higher levels of obesity and diabetes.⁸

A UK survey found that the majority of people support reducing car journeys. 55% of respondents stated that they were concerned about the damage to their lungs associated with exhaust fumes, whilst 74% agreed that vehicle use should be reduced to improve public health.⁹ In addition the noise generated by road traffic can also have significant negative health impacts with the World Health Organisation rating this at one point as the second most significant environmental cause of ill health in Western Europe. High levels of noise are associated with stress, poor sleep, high blood pressure and cardiovascular disease¹⁰.

Conclusion

Analysis undertaken by the NTA shows that there will be a rapid shift towards more active modes of travel. This will in turn lead to improvements in health as people adopt a more healthy lifestyle. Over time this will begin to impact both mental and physical health and will be particularly important for the lower socio-economic areas along the routes. Whilst the changes in travel choices should happen relatively soon after the opening, it is anticipated that it will take time for individuals to gain the full health benefits (in particular to lose weight and gain the associated benefits). It will be particularly beneficial to the 49% of overweight individuals who state they are trying to loose weight⁴.

Improvements in walking and cycling have also been shown to improve individual productivity

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Impact on productivity

Increased active travel choices don't just improve the health of the communities along the route, it also helps the health of the businesses along the routes as well. Research in the UK has found that employees who are physically active have been found to take 27% fewer sick days than their colleagues.¹¹ Additional research in Holland found that people who cycled took 1.3 fewer sick days than their colleagues¹². This study also found the benefit increased in line with the distance that employees cycled to work. A further UK study also found that people who walked or cycled to work reported better overall health levels.¹³

These health benefits in turn can make people more happy and productive at work. Research in the UK found that 73% of employees who cycle reported that this made them feel more productive at work and 54% felt happy and energised at work¹⁴. Another study found that those who walked or cycled also reported feeling under less strain.¹⁵ It has been estimated that these absenteeism benefits save the UK economy around £128m in avoided lost output.¹⁶

Conclusion

The proposed investments in walking and cycling infrastructure will not just benefit individuals but also all of the businesses whose workers live along the corridors. This will be due to the improved health and productivity of their work force. As with the wider health benefits this will build up over time as employee health improves. Retail and leisure businesses in the community centres along the route could therefore gain a double benefit from both increased sales and improved staff productivity.

The background of the slide is a blurred photograph of a city street. In the foreground, a bus is moving from left to right, creating horizontal streaks of yellow and blue. In the background, a modern cable-stayed bridge with a white pylon and numerous cables is visible against a blue sky. A modern building with a glass facade is also partially visible in the background.

5

The impact on social cohesion

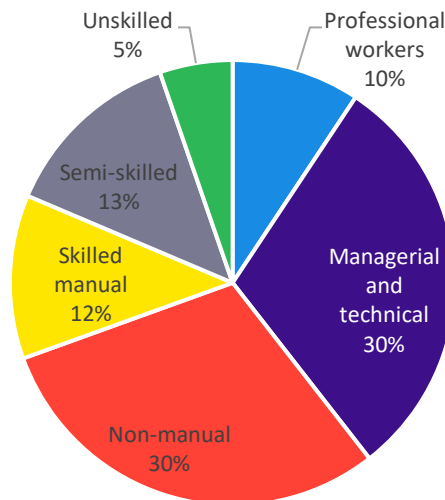
Improved transport infrastructure is particularly important for those on low incomes or who are unable to drive a car

Public transport fosters social equity

Improved public transport will provide better transport options to all social groups. This will be particularly important for groups in society who have limited access to cars. Recent analysis in the UK shows that in 2018 around 33% of households in the lowest income quintile did not have access to a car, compared to just 5% of households in the highest income quintile¹. A further UK study² found that as a result of this, those on lower incomes depend more on public transport to move around. In particular, people who depend more on the bus network for work tend to be lower paid, live in more deprived areas, and are more likely to turn down jobs due to transport issues, than those on higher incomes, who tend to use cars and trains more often. Other research also supports this, in a comparative study of four bus rapid transit systems, most users came from lower to middle income groups³. This can also be seen in Ireland, with the 60% of all bus users coming from skilled manual, or lower skilled cohorts groups, which is a reasonable proxy for lower to middle income groups.

In addition to low income households, there are many other people in society who either cannot afford a car or cannot drive for a specific reason, this includes young adults, those with a disability or elderly people. As such, the provision of public transport plays a pivotal role in these people's lives. Without easy access to public transport networks, in particular bus networks, these people will struggle or be unable to make the journeys that they need.

Bus ridership by social group, 2016



Source: National Census 2016

If households are unable to access certain opportunities such as developing social capital, acquiring goods, and using services, this can then lead to social exclusion⁴ as individuals are left on the peripheral of society.

Public transport offers people, particularly those at a disadvantage, the opportunity to access jobs and services. As a result, communities can become more fair and equitable. Research from the UK⁵ has found that the provision of good public transport networks can create civic participation, connectivity, and health and wellbeing which can all contribute to addressing the wider societal challenges of exclusion and isolation.

Conclusion

The proposed infrastructure improvement works will deliver more public transport options. This will have a major impact on some of the most vulnerable cohorts in Dublin, including those on low income, those with disabilities, elderly people no longer able to drive and young people not yet eligible to drive (or who cannot yet afford a car). These cohorts are more reliant on public transport and will find themselves much more connected to society once the improved public transport options are available. This will be particularly important for the 47.2% (2019) of all Dubliners who do not own a driving licence⁶.

Low income households can benefit from improved employment opportunities and job satisfaction

Impact on employment

Improved public transport can create social equity through access to employment. Research by the Department for Transport^{7,8} in the UK has found that jobs and amenities tend to be concentrated around transport links meaning that access to these transport links is necessary for accessing those opportunities. Poor transport can restrict access to high quality jobs and increase the risk of remaining unemployed for longer. This can limit people's opportunities to find employment and earn a stable income needed to support a healthy life. In addition, for those people who have insecure work with irregular hours, or low wages which do not justify the cost of commuting, it can also influence whether people stay employed or not.

Not only is the provision of public transport important in supporting people in accessing employment, but the quality of transport also plays a significant role. One study⁹ which looks at the links between employment and the quality of the transport network found that employment rates are negatively correlated with public transport travel times, even after controlling for car availability and socioeconomic variation. Using a cross-section of output areas from the English data in the 2011 Census, the paper found a statistically significant relationship suggesting that, all else being equal, areas with shorter public transport times were associated with higher employment levels. The results indicate that more investment to improve transport services and reduce journey times could result in better employment opportunities.

Another study¹⁰ utilised a survey conducted in the Cardiff region in order to analyse the effect of commuting time on self-reported job satisfaction. Two cohorts of respondents are constructed based upon income levels, thus establishing the offsetting effect of income on commute. The study found that longer commutes had a negative effect on job satisfaction for people earning below average wages.

Conclusion

The infrastructure works will lead to an improvement in both the availability of public transport and the time taken to get to places of employment. This will be particularly important for low income households and disabled individuals along the corridors. They will gain access to more, and better jobs, and they may also be more likely to remain in those jobs. Not only will this lead to higher employment for these individuals, but they will also gain from increased job satisfaction due to an improved commuting experience.

Improved access to services and amenities will increase the life satisfaction of people in the local community and wider Dublin area

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Impact on well-being

Transport is an important facilitator for social inclusion and wellbeing which, in turn, can affect economic and social outcomes. Public transport can connect people to essential services like healthcare facilities which is particularly important for vulnerable groups. It also allows access to non-healthcare activities that are beneficial for physical and mental health and for social connection and wellbeing¹¹, for example this can include connections to family, friends, jobs, amenities and hobbies.

Social inclusion is the ability for an individual to participate and be an active member of the local community. There is an overlap between social inclusion and physical and mental health wellbeing. Research in the UK¹² has shown that strong social connections and family relationships can foster social inclusion and wellbeing alongside accessible health and social care services. Transport plays a central role in enabling people to come together and connect. Therefore, there is potential for transport networks to help to address issues such as social inclusion and wellbeing as well as access to education, training and employment.

For example, in a paper¹³ which reviewed evidence exploring the interaction between transport, life satisfaction and wellbeing, it was found that transport has a measurable impact on psychological wellbeing. This is because transport improves mobility to allow more time to be spent out of the home engaging in social activities. This is particularly true for older people. As a result, older people experience lower levels of social exclusion and higher levels of psychological wellbeing, because their mobility, and in turn, wellbeing, was not restricted or limited.

Building on these findings, another paper investigated the health implications of inequalities in travel¹⁴. The report found that transport facilitates the independence of older people and those with a disability. Providing appropriate adjustments are made, the mobility and independence of these groups are improved. The same author also extended the point of transport and independence, linking this to improved wellbeing¹⁵. As the mobility of older people affects their ability to contribute to society, for example working in paid employment or volunteering, this has a direct impact on wellbeing. Results found that increased mobility is associated with higher levels of wellbeing and life satisfaction. This is because mobility is linked with feelings of independence, connectedness with the community, and a higher quality of life in general.

Conclusion

The proposed improvements will result in better public transport across Dublin and will play a key role in connecting people to essential services such as healthcare facilities and jobs. In addition, it will also provide people with improved access to family, friends, hobbies etc. This will enable people to feel more socially included as they can become a more active member of the society. This means that the proposed infrastructure improvements are likely to have a measurable impact on life satisfaction and wellbeing as mobility is linked with feelings of independence and as such allows for a higher quality of life.

Community centres can benefit from a reduction in crime linked to improved street furniture and increased pedestrian activity

The impact of transport infrastructure on crime

Good infrastructure has also been shown to have a positive impact on levels of crime, particularly low level crimes such as theft and vandalism. There is evidence from a wide range of studies that redesigned public realm, especially those which are better lit and more visible, see significant reductions in the level of crime.

A UK study found that a set of public realm investments in Stroud Town Centre¹⁶, led to burglaries dropping from 51 to 25 incidents per year and shop thefts dropping by a quarter. These public realm investments included new signage, efforts to promote increased activity within the town centre and good quality street lighting. The same study also found that a redesign of Mowbray park in Sunderland led to a reduction in incidents of anti-social behaviour from 30-50 per month to c.10 per month.

A study¹⁷ from Los Angeles in the late 1990s discovered that the location and visibility of bus stops can have an impact on crime. Where bus stops were clearly visible, offered shelter to the user and were on streets with high levels of vehicle traffic, criminal activity was less common. In contrast, crime rates were found to be higher if the bus stop was at an intersection with an alley, next to off-licences, cashpoint services, vacant buildings or on-street parking, or in areas where there was a lot of graffiti and litter.

Crime and Victimization Survey of Ireland, 2019



Source: CSO

Birmingham City Council achieved a 70 per cent drop in theft from shopping bags by increasing the lighting of their street markets and widening footpaths from 2m to 3m to give pedestrians more space. A similar street lighting project in Dudley has been credited with encouraging more pedestrians, particularly women, to use the streets at night. This in itself has a self-policing effect¹⁸.

Conclusion

The new infrastructure improvements should have a direct and immediate impact on crime along the corridors. It will provide better, safer and more visible bus stops whilst also improving the wider public realm infrastructure through investments such as improved street lighting. This will act as a direct deterrent to criminal activity and result in a reduction in crime. This in turn has been shown to encourage people onto the streets into the evening which will also support the night time economy in community centres.

The background of the slide is a blurred photograph of a city street. In the foreground, a bus is moving from left to right, creating horizontal streaks of yellow and blue. In the background, a modern cable-stayed bridge with a white arch and numerous cables is visible against a blue sky. A modern building with a glass facade is also partially visible in the background.

6 Adapting to the future

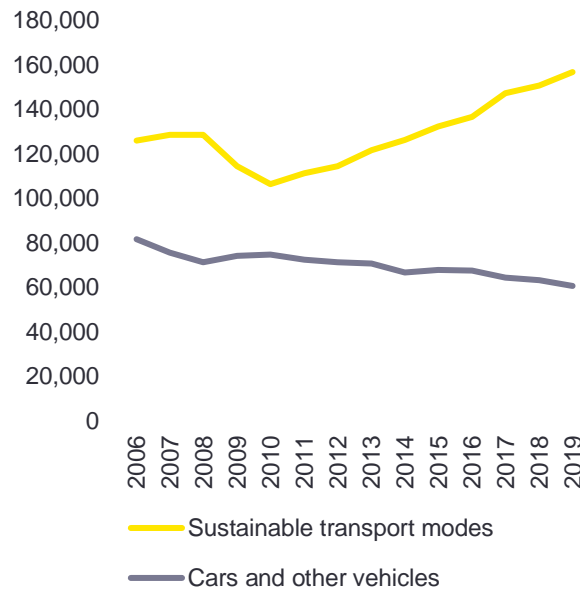
The improved transport infrastructure will deliver new transport options which are aligned to the trend towards more sustainable modes of transport

Changing travel pattern and the environment

Transport is the largest user of final energy in Ireland, accounting for 42% of energy demand and has been growing since 2012. Private cars are the largest single users of transport energy demand and account for 40% of all transport energy demand. Bus and rail, on the other hand, only accounted for a combined 4% of transport energy demand.¹ The need to tackle climate change and reduce transport energy demand by moving to more sustainable transport choices is becoming more important and people are becoming more aware of this.

This has led to travel patterns across Dublin changing. As can be seen in the graph to the right (based on data from the NTA Cordon Count²), there has been a strong growth in the number of people using sustainable transport choices (i.e. walking, bike or public transport) whilst at the same time the numbers travelling into Dublin by car has fallen. The data shows that there has been a particularly large increase in those walking and cycling. Walking has increased by 44.3% between 2006 and 2019 and cycling has increased 171.9% over the same period. There has been a fall in the number of cars, with the number of cars crossing into Central Dublin during the peak morning rush hour falling by 21%.

Total trips in and out of Dublin Centre



Source: NTA

The need to shift to more sustainable transport solutions is also recognised in the Dublin City Council Development Plan 2016 – 2022³. This strategy is based on the “*principles of sustainability and resilience on the social, economic and environmental fronts*”. The plan, as well as its successor, which is currently undergoing public consultation, places a strong focus on sustainable forms of transport, and contained a commitment to reduce transport related emissions by at least 3% per annum over the period of the strategy.

Conclusion

Dublin City is already moving towards much greater use of sustainable modes of transport and in particular walking and cycling. The proposed improvements will allow the communities along the route to be better linked into the wider network of cycle paths and walk ways across Dublin, for instance the new cycle lanes along the quays in central Dublin. They can continue to contribute to the overall reduction in car journeys in Dublin and support the vital green agenda.

The project can support the move towards more shopping close to home rather than in city centres, a shift accelerated by Covid-19

Shopping close to home

Recent evidence shows that consumers are moving towards more localised shopping. In a report produced by the European Commission⁴ which analyses consumer trends, 56% of EU consumers considered, at least once, the environmental impact of their purchase while 23% of consumers considered the environmental impact of most or all of their purchases. This is up significantly on 2014 figures, when only 18% of EU consumers considering the environmental impact of most or all of their purchases. Most importantly, consumers are actually buying products which are better for the environment with 67% of respondents saying they bought such products even if they were more expensive. Results from a Behavioural and Attitudes survey conducted during 2020 indicate that Irish consumers' environmental awareness is also on the rise. When shopping for groceries, 44% state that they give a lot of consideration to sustainability⁵.

This change has been further accelerated by Covid-19. Such changes are evident in data released by the European Commission. During 2020, 81% of consumers shopped closer to home and supported local businesses⁶. This can involve leaving the home (during a work from home day) to shop or simply using local shops on the way in or out of a work location. As consumers' lives have been upended by the impact of the virus, such changes in shopping behaviours are likely to be long-lasting with a study by Accenture showing how consumers are actually planning to increase local shopping even once the pandemic is over⁷, see graph to the right.

Proportion of consumers reporting changing shopping habits



Source: Accenture⁷

In addition to a growing desire to shop more locally, recent evidence suggests that in the UK, 87% of consumers live within a five mile radius of their nearest high street, and tend to visit several times a week for small 'top up' or leisure trips (38%)⁸. These trips are easily facilitated by active travel modes such as cycle lanes and pedestrianisation. The evidence shows that reallocating space and prioritising active modes has economic benefits and can provide a better space for people to live, work and shop in⁹.

Investment in this area would also support Ireland going forward, especially in wake of working patterns due to Covid-19. According to the Behaviour and Attitudes survey, 76% of Irish people surveyed said they wanted a hybrid model in future with a combination of working from home and in the office¹⁰.

Conclusion

The proposed infrastructure will provide communities along the routes with access to employment hubs in the centre of Dublin whilst also keeping them connected to local shops, restaurants and other businesses. This will be a key element in transitioning to a future of work whereby people work more from home and will look to engage with local shops on a more regular basis. Trips to local shops are far less likely to require the use of a car and therefore the ability to reach the shops by walking, cycling or public transport will become increasingly important.

As the economy recovers from Covid-19, demand for travel into the centre of Dublin is likely to return as people re-engage with the office, however the evidence shows they are more likely to want to shop closer to home and will find new ways of doing so.

The improvements in the public realm, discussed in Section 3, will also contribute to this trend, ensuring that in the longer run local businesses, regardless of their size, are able to maximise shoppers desire to purchase goods locally.

7

Case studies

A scheme on Bloor Street in Toronto, Canada was found to have a number of impacts, but the net impact was sufficiently positive to make the trial permanent

Bloor Street: Pre-cycle lane



Bloor street: With cycle lane



In 2016 the City of Toronto installed a 2.6km cycle lane along Bloor Street, a busy down-town commercial street. This involved the removal of one lane of traffic as well as a large number of parking spots. Concerns were raised by merchants that this would have a negative impact on their businesses and as a result a full assessment of the pilot was commissioned before a decision was made as to whether to go ahead permanently.

This assessment^{1,2} found a number of positive and negative impacts as a result of these changes.

The positives	The negatives
<ul style="list-style-type: none"> ✓ The number of businesses which reported serving more than 100 customers per day rose from 46% to 62%. 	<ul style="list-style-type: none"> ✗ Parking became more challenging with the numbers reporting difficulty finding a space rising by four times. Overall numbers of people parking fell by 5.95%
<ul style="list-style-type: none"> ✓ Visitors reports coming to Bloor street three days more per month, with locals 2.6 times more likely to spend \$100 than those from more distant locations 	<ul style="list-style-type: none"> ✗ Traffic volumes along Bloor street fell by 18% and journey times increased by 4 minutes to 8 minutes
<ul style="list-style-type: none"> ✓ Overall spending increased by 4.45% compared to 3.73% in the area around Bloor street. 	<ul style="list-style-type: none"> ✗ Increased difficulties with loading and unloading trade vehicles were reported, though these were mitigated through introduction of loading zones and other similar measures.
<ul style="list-style-type: none"> ✓ 85% of cyclists felt safe cycling to Bloor street (compared to 3% beforehand). 66% of motorists also reported feeling safe driving alongside cyclists (14% beforehand) 	

Conclusion

The scheme was popular with both residents and merchants and led to a more commercially successful and attractive location. This in turn lead to more visits and higher overall revenues for shops. Concerns raised by merchants around loss of shoppers were not realised and it was found that merchants over-estimated the numbers of customers arriving by car (10% actually arrived by car compared to merchant estimates of 25%). This meant that the loss of parking spaces was more than offset by the increased numbers arriving by other modes of transport. As a result of this assessment the City of Toronto decided to make the scheme permanent.

The value of the public realm was investigated by Transport for London, which found large benefits for locations which invested in improvements, such as Bromley

Bromley East Street: before improvements



Source: Bromley North Village Improvement Scheme Impact Review

Bromley East Street: after improvements



Source: Bromley North Village Improvement Scheme Impact Review

The value of improving the public realm was assessed by Transport for London³. This found a number of key benefits associated with additional public realm investments including:

1. A decline in the vacancy rates of around 17% per annum
2. A 93% increase in active street behaviours (i.e. walking and cycling)
3. A 216% increase in leisure based activities such as stopping at a café for a coffee

One of the areas assessed as part of this study was Bromley town centre. This received a £2m grant in 2014 to undertake a series of capital improvements to its town centre. This included improvements to signage and street furniture as well as promotional campaigns and events. A more detailed investigation of the benefits of this work was undertaken⁴ which found the following results:


The positives	The negatives
<ul style="list-style-type: none"> ✓ 11 New businesses opened, generating an addition 92 full time equivalent jobs 	<ul style="list-style-type: none"> ✗ A number of businesses reported disruptions during the construction works.
<ul style="list-style-type: none"> ✓ £4.1m in additional spend for local businesses was generated as a result of the spend on the public realm improvement works. 	<ul style="list-style-type: none"> ✗ 72% of businesses reported problems with parking and loading arrangements
<ul style="list-style-type: none"> ✓ 69% of businesses felt it improved the vitality of the town centre and 80% of visitors felt it made it more attractive 	<ul style="list-style-type: none"> ✗ It was suggested that the public realm was not well enough maintained and that issues such as increased litter were not well addressed

Conclusion

The evaluation showed that the public realm improvements had been generally well received by both businesses and local residents and had led to increased economic activity in the area. Whilst it was felt to be too early to fully assess the impact on the wider Bromley environment “positive early signs” were identified. A number of negative issues were identified and recommendations were made to address these. This aligned with the wider Transport for London evaluation which shows that even small investments in public realm can lead to large improvements in the way locals engage with the area and how they shop.

³ Street appeal The value of street improvements

⁴ Bromley North Village Improvement Scheme Impact Review & Bromley Town Centre Outer London Fund Evaluation

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Appendix : Bibliography

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