Rialtas na hÉireann
Government of Ireland

Understanding and Overcoming Barriers to Implementing Pedestrianisation

Transport Research Insights

Hugh Carrigan

Strategic Research and Analysis Division, Department of Transport

2025

Rialtas na hÉireann
Government of Ireland

IGEES
Seirbhís Eacnamaíoch agus Luachála Rialtas na hÉireann
Irish Government Economic and Evaluation Service

This paper has been prepared by staff in the IGEES unit in the Department of Transport. The views presented in this paper do not represent the official views of the Department or the Minister for Transport.

Contents

Executive Summary

Pedestrianisation is defined as a complete or partial reallocation of road space in urban centres from private vehicles to mainly pedestrians on mixed-use or commercial streets. Benefits of providing pedestrianisation infrastructure include health, environmental, social and economic benefits. However, pedestrianisation schemes can face opposition due to concerns such as vehicle displacement, land value uplift resulting in higher rent costs, anti-social behaviour, littering and excessive street life. Understanding, anticipating and taking steps to alleviate stakeholder concerns relating to infrastructure projects is important due to the potential for lengthy time delays and associated cost overruns.

Economic Impacts of Pedestrianisation
Available evidence suggests either positive or insignificant economic effects on retail businesses following the implementation of active travel pedestrian facilities. Businesses can overestimate the volume of customers who travel via car and underestimate those who travel via sustainable transport modes. Pedestrians and cyclists have been shown to not reliably or significantly spend more than motorists per trip in urban areas. However, they spend more on average per month in urban and retail environments than those who commute via car. This is likely due to the increased footfall in urban areas with active travel facilities, suggesting that active travel users make more trips per month on average. Most case studies in the Irish context indicate positive public perception and increased footfall on pedestrianised streets.

The context of an area in which pedestrianisation is introduced matters. There is evidence to suggest that vehicle-focused businesses such as supermarkets, mechanics, petrol stations as well as businesses which sell heavy or bulky goods may experience a reduction in sales from active travel infrastructure, specifically bicycle facilities. Beyond vehicle-focused enterprises, Ireland's transport system can be characterised as having a high degree of car dependency. Locations in which car dependency is most acute are likely to be poor candidates for pedestrianisation. For example, outskirts of cities where residents have limited options in terms of public transport or active travel.

Status Quo Bias
Beyond car dependency, Status Quo Bias (SQB) provides another explanation for why local opposition to new pedestrianisation infrastructure might persist within suitable contexts, despite evidence that negative economic outcomes for local communities do not necessarily materialise. SQB is comprised of a myriad of cognitive biases resulting in individuals preferring the status-quo to an alternative scenario. SQB is influential in terms of opinion formation. When evaluating the status quo, people can be more likely to focus on its positive aspects. In contrast, when faced with evaluating an alternative scenario to the status quo, people are more likely to consider negative aspects of the proposal.

Policy Considerations
Policy considerations given the above findings include implementing best practices for public engagement to build trust with the relevant stakeholders. Considering the context of an area when implementing pedestrianisation is also vital. Pedestrianisation is likely most suited to streets within economically vibrant urban centres where retail business is prevalent, and vehicle-focused business is not present. Any pedestrian scheme should also consider the likelihood of positive and negative externalities occurring within the proposed area.

An effective strategy for overcoming Status Quo Bias depends on how information is communicated. Information between the status quo and the alternative scenario should be presented in a way that allows stakeholders to proportionally account for the benefits and costs associated with the current and alternative scenario. Furthermore, providing evidence from pilot schemes and past experiences from successful pedestrianisation projects may help to quell stakeholder concerns relating to negative economic impacts.

1. Introduction

Pedestrianisation refers to the reallocation of road space in urban centres from vehicles to pedestrians on commercial or mixed-used urban streets as a means of reducing private vehicle usage and encouraging walking. Fully pedestrianised streets relate to the complete reallocation of road space to pedestrians. Partially pedestrianised streets encompass shared surface streets and integrated spaces which involve a suite of traffic calming measures such as the widening of footpaths, the introduction or expansion of cycle lanes, and removal of traffic lanes. However, unlike fully pedestrianised streets, the street remains shared between pedestrians, cyclists and motorists.

The provision of pedestrian infrastructure is an important policy objective for meeting the Climate Action Plan's transport-related targets (SMP, 2022). Pedestrianisation also provides an array of economic, health, environmental and social benefits. (Brownrigg-Gleeson et al., 2023; Soni & Soni, 2016). Nevertheless, there can be opposition by various stakeholder groups to implementing pedestrianisation (Nello-Deakin et al., 2024). Consequently, it is important for policymakers to understand the potential costs and benefits associated with pedestrianisation as well as key barriers to its implementation.

This paper presents findings from an extensive literature review as well as an analysis of both domestic and international cases studies of pedestrianisation with a view to shedding light on the following questions:

1) What are the economic impacts of pedestrianisation?
2) What are the main barriers to implementing pedestrian infrastructure in Ireland?
3) What are the possible policy solutions for overcoming these barriers?

Section 2 outlines the relevant policy context, section 3 outlines the economic impacts and externalities often associated with pedestrianisation as well as the common forms of local opposition to the policy, section 4 discusses the role of Status Quo Bias (SQB) as a driver of opposition to pedestrianisation, section 5 highlights the interaction between car dependency and pedestrianisation, section 6 outlines best practice and potential policy solutions.

2. Policy Context

Based on key commitments set forth by the Climate Action Plan (CAP), and agreed by Government, the required level of carbon abatement in the transport sector by 2030 is 50 per cent relative to its 2018 baseline. Furthermore, key CAP targets for transport include a 20 per cent reduction in total vehicle kms relative to 2030 business as usual scenario and a 50 per cent increase in daily active travel journeys by 2030 (CAP, 2024). Based on current projections, the transport sector is set to miss its emissions target, with emissions projected to fall by between 8.7 - 20.9 per cent by 2030 (EPA, 2025).

Transport was the second largest sector for carbon emissions in 2023, with road transport as the main driver of those emissions (Climate Change Advisory Council, 2025). The implementation of active travel policies, such as pedestrianised streets, is essential if the transport sector is to achieve CAP targets. In turn, the Sustainable Mobility Policy (SMP), is a strategy used for improving and expanding active travel and public transport journeys. It is intended to aid the CAP in achieving its transport targets and is critical in accelerating the rollout of sustainable modes of transport.

The National Investment Framework for Transport in Ireland (NIFTI) is another key policy that looks to prepare Ireland's transport system for its population demands by 2040 and to aid in the delivery of the National Strategic Outcomes. Pedestrianisation fits primarily within three of its four key priorities for investment, namely 1) decarbonisation, 2) mobility of people and goods within urban areas and 3) protection and renewal.

3. The Economic Impacts of Pedestrianisation

This section outlines common forms of local opposition to the introduction of pedestrianisation infrastructure and evidence relating to the economic impact of pedestrianisation once implemented. Several case studies are then outlined which illustrate the types of concerns that locals express and the impact that pedestrianisation has been found to have across specific locations.

Positive and Negative Externalities

Externalities refer to positive or negative consequences of economic activity that impact third parties not directly involved in a transaction. Positive externalities arising from providing pedestrianisation infrastructure include health, environmental, social and economic benefits (Brownrigg-Gleeson, 2019; Soni & Soni, 2016). For example, based on data from the Irish

Metropolitan Areas, as noted in the Walking and Cycling Index[1] 2023, walking was found to bring a monetised economic benefit of €684 million based on car journeys foregone in Ireland in 2023 (Sustrans, 2023). Other studies have found increases in productivity and fuel savings via the modal shift from private vehicles to more sustainable and efficient modes (Soni & Soni, 2016; Litman, 2024).

Additionally, it has been estimated that walking prevents 985 deaths per year in Ireland (Sustrans, 2023). Reduced car usage arising from pedestrianisation can also boost air quality and reduce noise pollution. (Blaga, 2013; Soesbergen & Mulligan, 2024). Furthermore, social benefits from pedestrianisation include increased social interactions as well as improved liveability of the urban environment (Soni & Soni, 2016).

Pedestrianisation can also produce negative externalities such as vehicle displacement and land value uplift resulting in higher rent costs. These are key concerns voiced by residents, motorists and local businesses opposing such schemes (Anguelovski, Honey-Rosés & Marquet, 2023; Soesbergen & Mulligan, 2024; Nello-Deakin, 2024; Ozdemir & Selcuk, 2017; Boveldt et al., 2023).

Traffic displacement from pedestrianisation may lead to noise pollution and reduced air quality in other areas because of traffic being rerouted (Soesbergen & Mulligan, 2024). Melia & Calvert (2023) find road closure may not necessarily lead to traffic reduction but rather traffic displacement on the surrounding streets. However, the closure of strategic roads within city centres has also been found to lead to traffic reduction without displacement of traffic on the surrounding area (Melia & Calvert, 2023). This is likely due to motorists having to significantly change their driving routes given the strategic significance of certain road closures.

Pedestrianisation has been shown to inflate real estate values in some contexts which may lead to increases in rents (Ozdemir & Selcuk, 2017; Hass-Klau, 1993; Nello-Deakin, 2024; Arslanli et al., 2017). One study (Chau, Pretorious & Yu, 2000) found that pedestrian flows were a determinant of retail unit prices because businesses exhibited a willingness to pay higher prices for units located in areas with higher pedestrian flows. Commercial displacement occurs when the increase in sales for existing businesses on pedestrianised streets is offset by higher rents (Ozdemir & Selcuk, 2017). However, drivers of increased rents and property prices are multi-faceted and complex issues which Nello-Deakin (2024) highlights may only marginally be driven by pedestrianisation. It is imperative to note that commercial displacement is context dependent, not an inevitable consequence of pedestrianisation. Certain jurisdictions employ

[1] Metropolitan Areas included were Cork, Dublin, Galway, Limerick - Shannon and Waterford Metropolitan Area.

preventative measures to protect vulnerable residents and businesses which may be exposed to rent increases (Ozdemir & Selcuk, 2017; Anguelovski, Honey-Rosés & Marquet, 2023; Kirmizi, 2021; Nello-Deakin, 2024).

Beyond higher rent costs, residents and motorists may also express concern about pedestrianisation due to potential increases in anti-social behaviour, littering and excessive street life as well as a decrease in car accessibility in the case of motorists (Nello-Deakin et al., 2024; Castillo-Manzano et al., 2014; Parajuli & Pojani, 2017). Villani & Talamini (2023) demonstrate how pedestrianisation schemes in Hong Kong faced problems in terms of noise pollution and hygiene problems because of poor public and community engagement in the planning and design processes.

The available literature indicates that negative externalities from pedestrianisation are possible, but they are not inevitable. **The process by which pedestrian schemes are designed and the context in which they are introduced is a key determinant in their success**. Opposition to pedestrianisation from locals has been found to wane overtime and general approval increases as the economic, social and environmental benefits of the policy were realised (Nello-Deakin et al., 2024; Castillo-Manzano et al., 2014).

Economic Impacts of Pedestrianisation

The business sector is a key stakeholder which may express concerns regarding the economic impacts of pedestrianisation such as fears of reduced customer footfall and decreased sales revenue. Volker & Handy (2021) carried out a comprehensive literature review of studies examining the economic impact of pedestrian and bike facilities on businesses across the US and Canada. The studies analysed varied in terms of quantitative and qualitative methodologies. Overall, the review concluded that when active travel infrastructure is developed, it will have **either positive or insignificant economic effects on the retail businesses** on the pedestrianised street, with the weight of evidence[2] suggesting the former is more likely. Additionally, those that travel via walking/cycling do not reliably or significantly spend more or less than motorists with respect to retail businesses such as cafes and restaurants per trip. However, cyclists and pedestrians were found to spend more on average per month in retail and urban areas than those that travel via car, with evidence for increased footfall in areas where active travel facilities were implemented (Volker & Handy, 2021).

[2] This is based on the findings of 15 studies on pedestrian and bike facilities analysed by Volker & Handy (2021) which used differing qualitative and quantitative approaches.

There is also evidence to suggest that **businesses can overestimate the amount of their customers that travel via car** and underestimate the amount of their customers that travel via sustainable transport modes (Kohn, 2021; O' Connor et al., 2011; Betzien, 2021)

In contrast, vehicle-focused businesses such as supermarkets, mechanics, petrol stations as well as businesses which sell heavy or bulky goods may experience a reduction in sales from active travel facilities, specifically bicycle facilities (Volker & Handy, 2021). As such, shared urban spaces need to consider the specific needs of the local context such as the type of businesses and the main modes of transport customers use to access those businesses.

Case Study: Dún Laoghaire-Rathdown 'Covid-19 Mobility & Public Realm Works

Since 2020 Dún Laoghaire-Rathdown County Council (DLRCC) has implemented road reallocation policies with the aim of making areas more pedestrian friendly. These include Dundrum and Blackrock Village. Surveys were used to gauge business response these measures (Rock et al., 2024; Rock et al., 2021). In the case of Dundrum Main Street, traffic calming measures were introduced in August 2020. This included the widening of pedestrian paths and the replacement of a two-lane road carriageway with one lane for vehicular traffic, in addition to contra-flow bicycle lanes and a bus stop reallocation. Public space was increased by 26 per cent on the street. While there are limitations in baseline data[3], there was a 63.4 per cent increase in footfall in June 2023 on the Main Street when compared to June 2020 (Rock et al., 2024).

While the policy was supported by most stakeholders, the business community in Dundrum were not supportive of the changes. The main concerns expressed were a decline in retail vibrancy of the street, high rents, and a lack of variety of shops as well as a deterioration of the old Dundrum shopping centre and persistent underinvestment in the area (Rock et al., 2024). These problems have been prevalent for many years before the Public Realm Works project; however, the business community fear these problems will only be exacerbated (Rock et al., 2024).

Blackrock Main Street also underwent temporary road reallocation during the summer of 2020 based on Covid-19 restrictions for outdoor dining. Public space was increased by 25% based on the reallocation (Rock et al., 2021). However, businesses were more positive in this context than in Dundrum, with 72% surveyed in favour of making the changes permanent (Rock et al., 2021). This appears to be due to a greater variety of retail and food-related business on

[3] A snapshot of footfall was taken on the street for June 2020 and compared to June 2023 to estimate this figure (63.4%). It is important to note that in June 2020 there was light to moderate rain during this period and Level 2 Covid-19 restrictions were also in place.

Blackrock Main Street compared to Dundrum Main Street as well as relatively less preexisting economic issues compared to Dundrum Main Street prior to the road reallocation (Rock et al., 2021). As a result, understanding the economic context of a street to be pedestrianised in terms of the types of business, levels of investment and additional economic issues is critical in assessing local opposition.

Case Study: Dublin's Capel Street

Capel Street was pedestrianised in June 2022 after a successful pedestrian pilot scheme in 2021 and is currently the longest pedestrianised street in Dublin. However, it should be noted there were initial grievances by businesses (Farrell, 2022). Nevertheless, after the street was fully pedestrianised, in September 2022 Dublin City Council (DCC) carried out a survey to determine public sentiment of the scheme. It found that the pedestrianisation of Capel Street had **improved the experience for 71% of businesses on Capel Street** and 85% of residents, as well as 68% of businesses on side streets. Additionally, 93% of the public said that it had improved their experience on the street. (Ginty, 2022).

Case Study: Galway City

During the summer months of 2024, Galway City Council announced that the Westend area of the city would be closed off from traffic from May to September, encompassing Small Crane, Ravens Terrace and William Street West. This seasonal pedestrianisation scheme is supported by the Galway Westend Trader's Association because of the boost in footfall and economic activity which it brings to businesses in the area each season (Sassone, 2024).

Case Study: Cork City

As part of 'Reimagining Cork City', streets were temporarily pedestrianised during the Covid-19 Pandemic for social distancing and outdoor dining. Following the success of the scheme, 17 streets within the city were permanently pedestrianised (Cork City Council, 2024). The feedback received by Cork City Council on the pedestrianisation schemes from businesses and the public alike are majority supportive of the pedestrianisation schemes, with plans to expand the active travel policy in the future. This is due to the overall economic and health benefits that such schemes have provide to the public and businesses within Cork City (O' Regan, 2023).

International Case Studies

Germany

Numerous pedestrian zones were built in Germany in the 1960s and 1970s (Aachen, Bamberg, Darmstadt, Herford, Nuremberg, Osnabruck and Wiesbaden). **Most towns showed a positive increase in pedestrian flows of at least 18 per cent or more (Hass Klau, 1993).** 1066 businesses within the retail, hotel and restaurant industries in pedestrianised areas were also analysed across 11 German towns. Most businesses either experienced an **increase in their annual turnover or no significant change** across each industry in the pedestrianised areas.

United Kingdom

Business opposition to pedestrian schemes was evident in Old Town, Brighton in the UK in 2015 (Melia & Shergold, 2016). Concerns relating to the schemes, such as a **fall in business activity, did not in fact materialise. There was a general acceptance for Brighton's pedestrian schemes because of other previously successful pedestrian pilot schemes in the area**.

Spain

The city of Seville engaged in various pedestrianisation projects between 2006-2010 within both the inner and outer city (Castillo-Manzano et al., 2014). There was a strong anti-pedestrianisation movement with respect to the outer city, largely led by both residents and local business. The arguments against pedestrianisation were largely based on problems of access to pedestrian zones and the availability of parking spaces which would hurt shopping centres more than smaller retail business. However, **this public opposition waned overtime and acceptance and positive public perception grew as local fears never materialised.**

4. Barriers to Pedestrianisation - Status-Quo Bias

An important question for policymakers is why local opposition to new pedestrianisation infrastructure might persist, despite evidence that negative economic outcomes for local communities are unlikely to materialise. Status Quo Bias (SQB) offers one possible explanation for opposition to active travel policies like pedestrianisation (Andersson et al., 2025), as well as broader policies aimed at mitigating climate change more generally (Rabaa et al., 2022).

SQB is a cognitive bias where people display a preference for the status quo and oppose policy interventions which would alter the current situation, even when the policy intervention would substantially improve the current situation (Garcia- Sierra, 2015). SQB may be evident amongst stakeholders who initially oppose a policy but subsequently accept and approve of the changes made after its implementation (Andersson et al., 2025). This dynamic can be observed in some

of the case studies outlined in Section 3. A potential explanation for ex-post acceptance of a policy, which was initially opposed because of SQB, can be explained through the concerns of negative consequences/outcomes not materialising or general resistance to change (Andersson et al., 2025; Borjesson et al., 2016).

SQB is driven by a myriad of cognitive biases relating to aversion to change (Lang et al., 2021; Rabaa et al., 2022; Borjesson et al., 2016; Garcia-Sierra et al., 2015). These include loss aversion and the endowment effect (Rabaa et al., 2022).

Loss aversion, a concept associated with SQB, describes a situation where individuals tend to weigh losses relatively more than gains (Kahneman & Tversky, 1991). This poses considerable problems for policies or legislation which contain upfront costs but produce a net positive overall (Milkman et al., 2012). This is because loss aversion can lead to the overestimation of expected losses by certain stakeholders (Milkman et al., 2012). Consequently, loss aversion may lead to a preference for the status quo.[4] In turn, it is one of the main drivers of the endowment effect (Duan, 2023).

The endowment effect describes a situation where a person places a higher valuation on a good simply because they own it (Kahneman et al., 1990). It can be identified through the disparity between a person's willingness to pay (WTP) and willingness to accept (WTA), where the endowment effect is evident when the individual/public is willing to pay less on average to implement a policy relative to their willingness to forego the policy once it is implemented (Lang et al., 2021). In turn, place attachment theory is also inherently related to the endowment effect and SQB (Timmons et al., 2024; Christiaanse et al., 2023). Place attachment theory describes positive emotional attachment to local areas which is associated with locals valuing the location more (Clarke et al., 2023). This may in turn explain local resistance to infrastructural changes like pedestrianisation. However, it is imperative to note that there is uncertainty within the literature over the exact causal psychological mechanisms which drive SQB (Timmons et al., 2024).

SQB is influential in terms of opinion formation. Andersson et al., (2025) demonstrate that on average, when evaluating the status quo, people are more likely to consider positive aspects. In contrast, when faced with evaluating an alternative scenario to the status quo, people are more likely to consider negative aspects of the proposal. This suggests that externalities associated with the status quo and alternative scenarios (i.e., non-pedestrianised versus pedestrianised

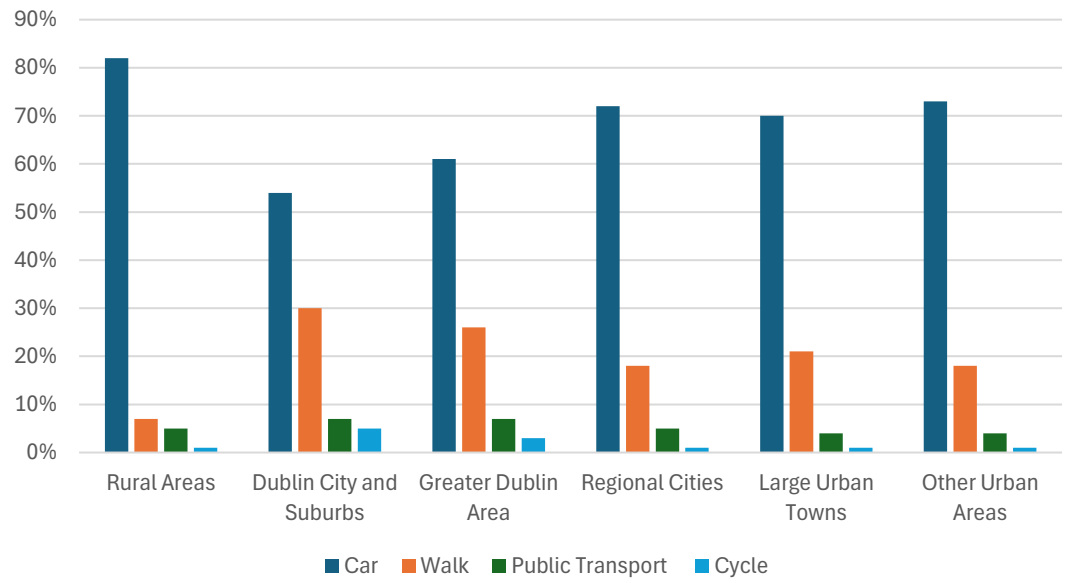
[4] While previous understandings of SQB is that it is an implication of loss aversion (Kahneman et al., 1991), more recent scholarship from Andersson et al., (2025) find that loss aversion was not the source of SQB, and thus they may be distinct concepts.

streets) are not considered proportionately. Greater focus could be paid to current issues facing non-pedestrianised streets such as the costs of congestion and road traffic fatalities (Department of Transport, 2023; Santos et al., 2010). The cost of congestion in the Greater Dublin Area was estimated at €336 million in 2022, with a potential to rise to €1.5 billion by 2040 if there are no policy interventions (Department of Transport, 2023). The cost of congestion is a composite cost of time lost, economic ramifications, increases in greenhouse gas emissions, increases in air pollution as well as health impacts (Department of Transport, 2023). Another cost associated with non-pedestrianised streets is road traffic fatalities. The EU CARE Database (2021) and International Transport Forum (2024) show that 35 per cent of all EU urban traffic fatalities are pedestrians, with 64 per cent of pedestrians dying from being hit by a car and a further 90 per cent die from collisions with any form of large vehicle.[5] Negative externalities of non-pedestrianised traffic-intensive streets can be considerable but may not be fully taken into account by local communities and stakeholders when evaluating proposals for pedestrianisation infrastructure.

5. Barriers to Pedestrianisation – Car Dependence

Private vehicles are the dominant mode of travel in Ireland. Travelling by car was the most popular form of travel in Ireland in 2023, accounting for 71 per cent of journeys nationally, followed by walking at 18 per cent (NTA, 2023). This is especially evident across rural areas but also in urban areas and cities as well (Figure 1).

Figure 1 – Percentage of Trips Taken by Transport Mode In 2023

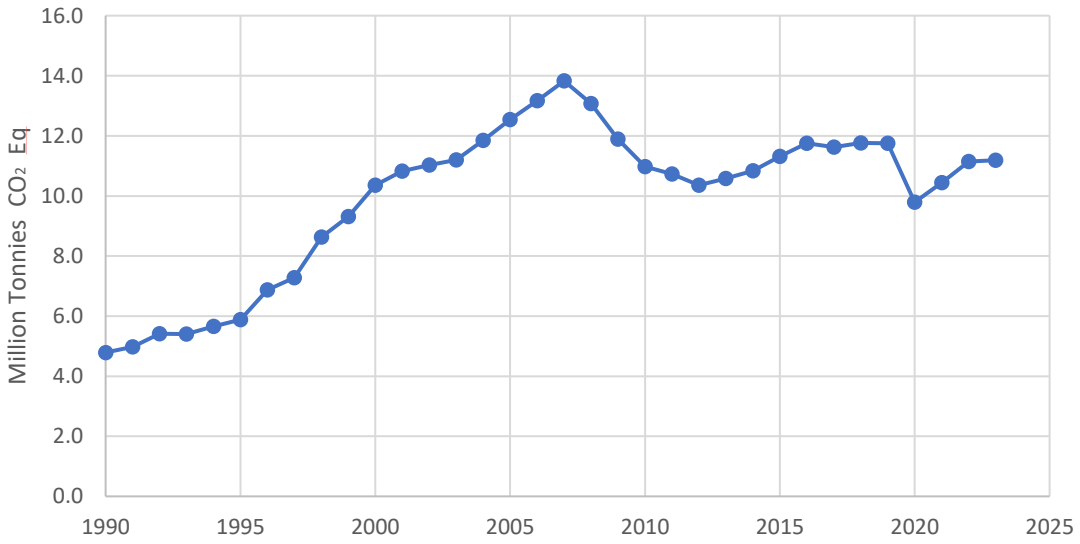


Source: National Transport Authority (2023)

[5] These statistics are based on Urban Areas within the EU in 2021

From 1990-2023, transport greenhouse gases (GHGs) have increased by 129.4 per cent, with road transport emissions as the main driver, increasing steadily by 133.9 per cent over this period as well based on figure 2 (EPA, 2025).

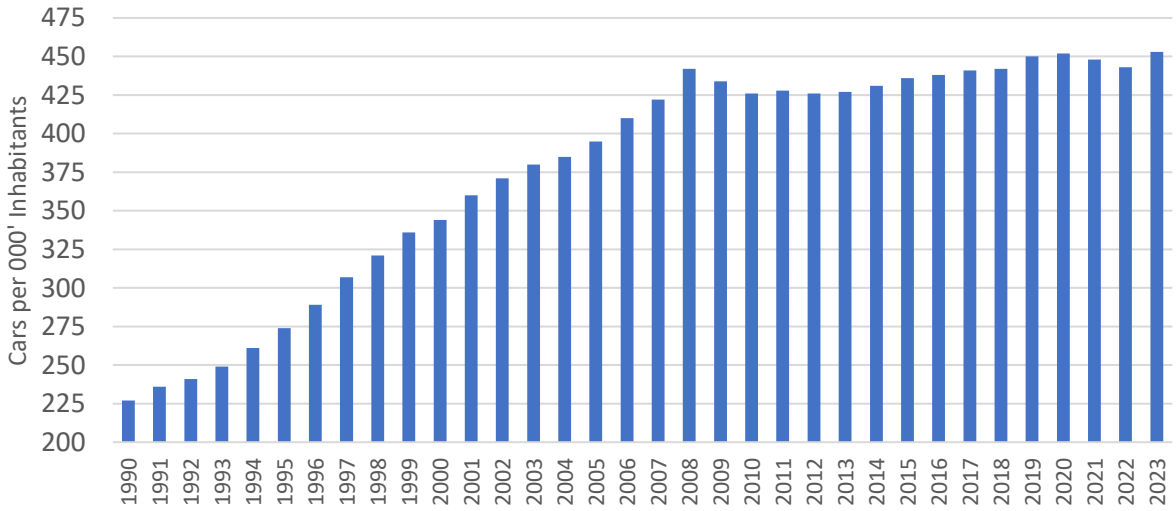
Figure 2 – Road Transport Emissions 1990 - 2023



Source: Environmental Protection Agency (2025)

The number of cars and commercial vehicles have also increased by 191 per cent and 177 per cent, respectively (EPA, 2025). The number of passenger cars relative to the population has increased consistently since the 1990s, from 227 cars per 1,000 of population to 453 cars per 1,000 as of 2023 (Figure 3). As such, commercial and private vehicles are ingrained in the transport system.

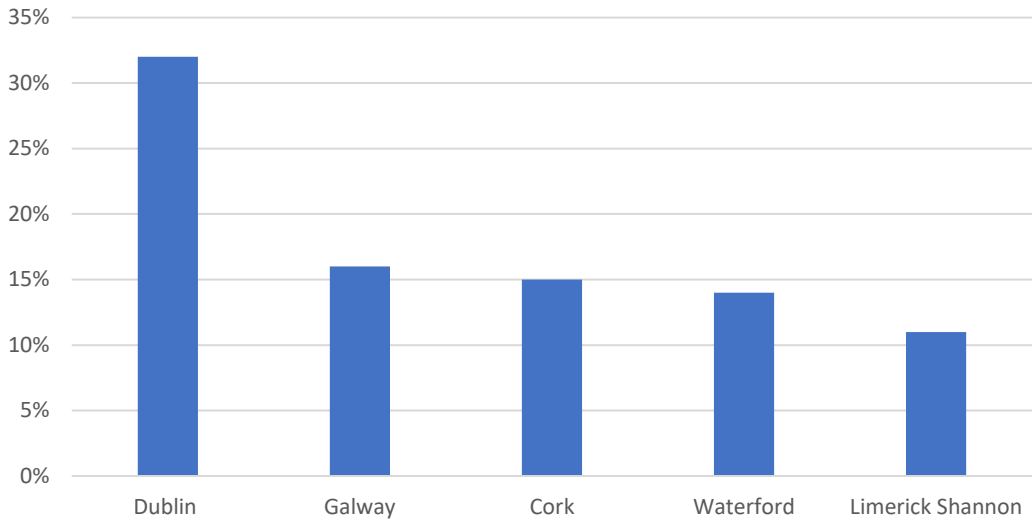
Figure 3 - Passenger Cars per 1000 Inhabitants



Source: Eurostat (2024) – Passenger Cars per Thousand Inhabitants (1990-2023)

Walking is a less attractive mode of choice outside of Dublin (Figure 4). This is indicative of car dependence, which is commonly associated with rural or low-population density areas that have poor access to alternative transport services (Carroll, Benevenuto & Caulfield, 2021). Areas in Ireland which are identified as hotspots for car dependency included Donegal, Mayo, Roscommon, Leitrim, and Cavan (Carroll, Benevenuto & Caulfield, 2021).

Figure 4 - Percentage of Households Living in Neighbourhoods of Walkable Density



Source: Sustrans Walking and Cycling Index (2023)

The key drivers of car dependence in Ireland include 1) urban sprawl, 2) induced car demand and 3) the sustainable modes low attractiveness gap (OECD, 2022). This can lead to problems with equity in terms of access to transport services and overreliance on private vehicles between urban and rural areas.

In some contexts, driving can be viewed as a need rather than a recreation. This is especially true for people in areas with inadequate access to transport services who are in turn forced into car ownership out of necessity (Lowans et al., 2023). Active travel measures such as pedestrianisation can be subject to resistance from a car dependent transport system (Egan & Caufield, 2024), particularly for motorists and/or motorist-related groups (Nello-Deakin et al., 2024).

Box 2: International Case Study – Pedestrianisation and Car Dependence in the United States

Car dependence has remained a key transport issue in the US, with 92 per cent of households owning at least one vehicle (Pew Research Centre, 2024) and 69.3 per cent commuting to work alone via car (ACS, 2023). Furthermore, people are reliant on private vehicles because they also play an important role in access to services and opportunities and can be consequential for social mobility (Wang & Renne, 2023).

As such the dominance of cars within the US provides important insights into how this is a key barrier to pedestrianisation and why pedestrianised zones failed across multiple States from the 70s to 90s. Of the two hundred pedestrianised streets that installed from the 1960s-1970s, **89% were eventually removed (Judge, 2013).** This was partly due to poor planning where pedestrianisation occurred in less population-dense areas which were more likely to fail and reallocate the space back to cars (Matuke et al., 2020). Also, the motivation for pedestrianisation in US cities at the time was not to achieve modal shifts from driving to active travel, but rather a failed attempt to boost economic activity (Pojani, 2010). In contrast, successful cases of pedestrianisation in the U.S. conformed to the driving culture, where modal shifts away from cars were not necessarily the aim. This is due to the successful planning of pedestrianisation projects, where such schemes were found to be more successful in places with thriving tourist and student populations as well as sufficient parking being located nearby (Matuke et al., 2020).

6. Potential Policy Solutions

It is vital to anticipate and take steps to alleviate stakeholder concerns relating to infrastructure projects because of the potential for lengthy time delays and associated cost overruns (Detombe, 2000; Cohen et al., 2016; Susskind et al., 2022). Public engagement is essential for building trust with the relevant stakeholders (residents, businesses, and motorists) and overcoming SQB, a key driver of public opposition. Best practice for effective public engagement includes dialogue, decision-making power, diversity and deliberation (Perlaviciute et al., 2022).

Dialogue

Communication and consultation with relevant stakeholders are key methods for building public trust and overcoming SQB. Dialogue between local government and stakeholders should be a two-way form of communication rather than merely a provision of information on pedestrianisation to stakeholders (Perlaviciute et al., 2022). Effective communication on pedestrianisation to overcome SQB should be considered as people become more receptive to active travel policy after learning additional positive information (Andersson et al., 2025). This information could include the economic, social, and environmental benefits from previous successful local pilot schemes in addition to permanently pedestrianised areas. Such examples include Capel Street, the Grafton Street Area, and the 17 pedestrianised streets across Cork City.

Decision-making power

It is also imperative that relevant stakeholders have some influence over the plans to pedestrianise their street when engaging with local government. By increasing the public participation and influence in the decision-making process, this can boost the acceptability of public projects within the community (Perlaviciute et al., 2022). Consequently, if the project has already been finalised and approved, then efforts to engage with the public may be viewed as tokenistic or futile (Villani & Talamini, 2023).

Diversity

The main stakeholders directly affected by the active travel policy (residents, motorists, and local businesses) of the surrounding area should be included in discussions (Perlaviciute et al., 2022). Additional efforts to include more marginalised groups should also be carried out. These include people with disabilities as well as accessibility advocates.

Deliberation

The pros and cons of proposed policies like pedestrianisation should be clearly outlined and considered. In tandem with this, the local context of the street should be considered, and policy should be tailored to suit its needs. Pedestrianisation can yield different outcomes under different contexts (Kirmizi, 2021). The pros and cons of pedestrianisation should be presented, with an emphasis on the benefits of pedestrianisation, given an individual's tendency to focus on the possible negative aspects of a proposal (Andersson et al., 2025). Additional considerations should also be made for which positive or negative impacts are more likely to occur on the proposed street and which stakeholders are most likely to be affected. In turn, preventative measures or supports could be provided where possible to the relevant

stakeholders who may be affected by the negative externalities of pedestrianisation (Ozdemir & Selcuk, 2017).

It is also imperative in the deliberations that stakeholders are asked about the current problems of the status quo scenario and potential benefits pedestrianisation could bring. Pedestrianisation can help revitalise areas by reducing air pollution and noise pollution from vehicular congestion as well as boosting the attractiveness of urban centres (Blaga, 2013). Asking stakeholders to identify problems with the status quo and the potential benefits of active travel policy may help to neutralise SQB (Andersson et al., 2025).

Status Quo Bias Solutions

Overcoming the cognitive biases associated with SQB, such as loss aversion and the endowment effect, requires providing information for stakeholders to accurately assess the expected gains and losses from pedestrianisation. This can be achieved by altering reference points (or points of comparison) (Mckenzie & Nelson, 2003). An effective method for achieving this could involve the provision of information between the status quo and the alternative scenario which highlights their similarities (Livneh, 2019). By highlighting the similarities between the current status quo (non-pedestrianised street) and an alternative scenario (pedestrianised street), this can help stakeholders realise that the policy intervention is not significantly altering the current status quo, which in turn may reduce their perceived loss estimations.

In a similar vein, information provision can aid in addressing loss aversion and boosting public support. Communicating the impact of previously successful pedestrianisation pilot schemes within the domestic context could be a useful tool in boosting public acceptance. Active travel schemes are often considered to enhance and rejuvenate urban areas (Yassin, 2019); prior to the advent of the car, walking or cycling were far more attractive transport modes. Illustrating this restorative aspect of pedestrianisation schemes may help to assuage stakeholders' concerns.

Information provision may also prove effective if it communicates both the private and public goods that pedestrianisation schemes can generate. Private goods refer to the economic benefits of pedestrianisation based on international and domestic case studies as well as academic literature which finds pedestrianisation has the potential to yield additional footfall for retail businesses (Volker & Handy, 2021). Public goods arising from pedestrianisation can include benefits with respect to air quality, social activity and increased public space (Soni & Soni, 2016).

Provision of information is considered pivotal in the process of opinion formation. Individuals tend to be sensitive to the first piece of information to which they are exposed. Furthermore, publicly committing to an opinion has been found to reduce the likelihood that individuals will incorporate additional information into their decision making. (Poluektova et al., 2024).

Driving Deterrents and Social Norms

Car-dominance in Ireland is a long-term systemic issue. However, short-term targeted efforts can be used to achieve a modal shift with respect to short car journeys which could have been made via active travel modes instead. The National Household Travel Survey in 2023 showed that 26 per cent of all car trips were 9 minutes or less, with a further 21 per cent of all car trips being between 10 - 14 minutes or less (NTA, 2023). Additionally, in 2023, Red C surveys indicated a clear demand for this, with 73 per cent of drivers being willing to shift from car to active travel/public transport usage for short journeys under two kilometres (Department of Transport, 2023).

Disapproving messages against driving can be used to create injunctive norms (norms which discourage use of certain behaviours such as short car journeys) (Mosca et al., 2024; Piras et al., 2021). As such, tailored messaging highlighting the economic and social costs of short-distance car journeys, while also highlighting the benefits of active travel and public transport, could be an effective tool in fostering pro environmental social norms. Such messages could typically be tailored towards more affluent areas on the outskirts of Irish cities where car ownership is higher (O' Driscoll et al., 2024).

However, there can be concerns over the equity of driving deterrents (Piatkowski et al., 2019). More specifically, driving deterrents should not be targeted at commuters living on the outskirts of cities that have limited options in terms of public transport and active travel and may be forced into car ownership (Rock et al., 2016).

Such messaging should be open and transparent about the behaviour change it wants to achieve. It can include information on the amount of people who commute via active travel or public transport in a person's area as well as savings from foregoing car journeys for sustainable alternatives (Schneider & Van Der Linden, 2023; Lades et al., 2020). Additional information is provided by Lades et al., (2020) on different communication strategies to foster pro-environmental travel behaviour by making driving appear difficult, unattractive, unsocial or untimely.

It is also important to be aware that information provision does not necessarily lead to behavioural shift, rather socialisation is also required (Yassin, 2019; Davis et al., 2014; Blauberger & Heindlmaier, 2024). Therefore, pilot schemes become imperative in informing policy and design. By using pre and post evaluation analysis techniques based on scheme-related data, it is possible to measure and evaluate the effectiveness of pedestrianisation projects based on relevant KPIs. These KPIs should be based on street level data such as pedestrian flows, cyclist flows, carbon emissions, particulate matter (PM 2.5 and PM 10) concentrations etc (Keseru et al., 2016).

7. Conclusion

Overall, this paper has provided insights into the various economic impacts of pedestrianisation, an exploration of the key barriers to pedestrian schemes, and suggested policy solutions for assuaging these barriers.

The implementation of pedestrianisation schemes can face opposition from various stakeholders such as residents, business, and motorists. This opposition is rooted in concerns of economic ramifications and potential negative externalities such as traffic displacement, anti-social behaviour, car accessibility, rent increases and commercial displacement. Available evidence and Irish case studies suggest that pedestrianisation produces either positive or insignificant economic effects on retail businesses. There are also additional positive externalities in terms of health, environmental and social benefits arising from reduced congestion. However, vehicle-focused business (petrol stations, car mechanics and bulk-purchasing businesses) have been found to experience negative economic impacts from active travel infrastructure, specifically cycling infrastructure.

Two key barriers emerged from the literature review as factors that can further contribute to stakeholder concerns to pedestrianisation infrastructure: SQB and Car Dependence.

- SQB is an umbrella term for cognitive biases that contribute to an individual preferring the current status quo over an alternative scenario. SQB can result in people being more likely to consider positive aspects of an existing scenario, and negative aspects of an alternative proposal. This suggests that positive and negative externalities associated with the status quo and alternative scenarios are not considered proportionately.
- Car Dependence relates to how the transport system in Ireland is dominated by private and commercial vehicles. Private and commercial vehicle usage can be viewed as an essential form of transport in certain contexts where alternative modes such as public

transport or active travel are not available or feasible. Pedestrianisation can be inappropriate in such contexts.

Given the above findings, policy needs to be cognisant of implementing best practices for public engagement to build trust with the relevant stakeholders. Considering the context of an area when implementing pedestrianisation is also vital. Pedestrianisation is likely most suited to streets within economically vibrant urban centres where retail business is prevalent, and car-focused business is not present. Any pedestrian scheme should also consider the likelihood of positive and negative externalities occurring and provide policy measures to stakeholders that are vulnerable to negative externalities.

SQB can be a key driver of opposition to active travel policy. When holding dialogue with these stakeholders, it is prudent to recognise if these fears are based on factors such as SQB or if they are rooted in structural factors such as the prevalence of vehicle-focused business.

An effective strategy for overcoming SQB is in how information is communicated, whereby information between the status quo and the alternative scenario is presented in a way that allows stakeholders to proportionally account for the benefits and costs associated with the current and alternative scenario. Furthermore, providing evidence from pilot schemes and past experiences from successful pedestrianisation projects may help to quell stakeholder concerns relating to negative economic impacts. The design of communication interventions should be informed by pre-testing to ensure effectiveness prior to implementation.

Finally, the use of driving deterrent messages has been found to contribute to behavioural change with respect to modal shift. However, the use of such an approach should be targeted to short distance journeys (under 2km) which could have been carried out via more sustainable transport modes.

References

American Community Survey (ACS), (2023). 'United States Commuting At A Glance: American Community Survey 1-Year Estimates'. Available at: https://www.census.gov/topics/employment/commuting/guidance/acs-1yr.html

Akit, (2004). Pedestrian experiences in Bahcelievler 7th street: Setting the design criteria for the enhancement of urban public realm. A thesis submitted to the graduate school of natural and applied sciences, The middle east technical university, 25-26.

Andersson et al., (2025). 'Status Quo Bias impedes active travel policy by changing the process of opinion formation' Papers WP755, Economic and Social Research Institute (ESRI).

Anguelovski, Honey-Rosés & Marquet (2023): Equity concerns in transformative planning: Barcelona's Superblocks under scrutiny, Cities & Health, DOI: 10.1080/23748834.2023.2207929

Appleyard, D. (1980). Livable streets: protected neighborhoods? *The ANNALS of the American Academy of Political and Social Science*, *451*(1), 106-117.

Arslanlı, K. Y., Dokmeci, V., & Kolcu, H. (2017). The effect of the pedestrianization of İstiklal Caddesi on land values and the transformation of urban land use. *A| Z ITU Journal of the Faculty of Architecture*, *14*(2), 31-41.

Betzien, J. (2021). Local business perception vs. mobility behavior of shoppers: A survey from Berlin. *Findings*.

Blaga. (2013). Pedestrian zones as important urban strategies in redeveloping the community-case study: Alba Iulia Borough Park. *Transylvanian Review of Administrative Sciences*, *9*(38), 5-22.

Blauberger, M., & Heindlmaier, A. (2024). Enforcement, Information or Socialization? The Role of the European Labour Authority in Protecting Mobile Workers in the EU. *JCMS: Journal of Common Market Studies*.

Borjesson et al., (2016). 'Why experience changes attitudes to congestion pricing: The case of Gothenburg,' *Transportation Research Part A: Policy and Practice, 85, 1-16.*

Boveldt, G., De Wilde, L., Keseru, I., & Macharis, C. (2023). Pedestrianisation as a step in a societal transformation? An analysis of support and opposition in Brussels. *Cities*, *143*, 104577.

Brocas, I., Carrillo, J. D., & Dewatripont, M. (2004). Commitment devices under self-control problems: An overview. *The Psychology of economic decisions*, *2*, 49-67.

Brownrigg-Gleeson, M. L., Monzon, A., & Cortez, A. (2023). Reasons to pedestrianise urban centres: impact analysis on mobility habits, liveability and economic activities. *Sustainability*, *15*(23), 16472.

Carattini, S., Carvalho, M., & Fankhauser, S. (2018). Overcoming public resistance to carbon taxes. WIREs Climate Change, 9(5), e531.

Carroll, Benevenuto & Caulfield, (2021). 'Identifying hotspots of transport disadvantage and car dependency in rural Ireland.' *Transport Policy*, 101, 46-56.

Castillo-Manzano et al., (2014). 'Extending pedestrianization processes outside the old city centre; conflict and benefits in the case of the city of Seville.' *Habitat International*, *44*, 194-201.

Chau, K. W., & Pretorius, F. (2001). Labelling Effects and the Price of Street Level Retail Shops. In *The Sixth Annual AsRES Conference, Tokyo, Japan*.

Christiaanse, S., Haartsen, T., & Venhorst, V. (2023). Aversion to loss of place: The endowment effect for local facilities. *Journal of Environmental Psychology*, *91*, 102101.

Clarke et al., (2018). 'Place Attachment, Disruption and Transformative Adaptation', *Journal of Environmental Psychology*, 55, 81-89.

Climate Action Plan, (2024). Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/296414/7a06bae1-4c1c-4cdc-ac36-978e3119362e.pdf#page=null

Climate Change Advisory Council (2025), Transport Sectoral Review: Annual Review 2025. https://www.climatecouncil.ie/councilpublications/

Cohen, J., Moeltner, K., Reichl, J., & Schmidthaler, M. (2016). An empirical analysis of local opposition to new transmission lines across the EU-27. *The Energy Journal*, *37*(3), 59-82.

Cork City Council, (2024). Available at: https://www.corkcity.ie/en/council-services/services/roads-and-traffic-management/pedestrianisation/;

Davis, R., Campbell, R., Hildon, Z., Hobbs, L., & Michie, S. (2015). Theories of behaviour and behaviour change across the social and behavioural sciences: a scoping review. *Health psychology review*, *9*(3), 323-344.

Department of Transport, (2021). *'National Investment Framework for Transport Infrastructure Ireland'*. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/211869/00417bf1-9473-41e2-bd91-327686e92081.pdf#page=null

Department of Transport, (2023). *Red C Survey*. Available at: gov.ie - Department launches 'Your Journey Counts' campaign as new research outlines support from public to cut transport emissions (www.gov.ie).

Department of Transport, Tourism and Sport, (2019). *Design Manual for Urban Roads and Streets*. Available at: https://www.dmurs.ie/copy-of-what-is-dmurs.

DeTombe, D. J. (2000). Anticipating and avoiding opposition in large technological projects. *International Journal of Technology Management*, *19*(3-5), 301-312.

Duan, R. (2023). Endowment Effect: Impact Factors and Influencing Mechanism. *Highlights in Business, Economics and Management*, *21*, 69-74.

EU CARE Database (2021), "Collision matrix (urban roads only)", European Commission, Brussels, https://transport.ec.europa.eu/system/files/2023-02/Collision%20matrix%20URBAN%202021.pdf.

Egan & Caulfield, (2024). 'Disruptive, dangerous, and dirty: active travel measures as a 'cause' of car-related externalities'. *Mobilities*, 19(1).

Environmental Protection Agency, (2025). Available at: https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/transport/

Environmental Protection Agency, (2025). *Ireland's Final Greenhouse Gas Emissions 1990-2023* Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-Final-GHG-Report-Final.pdf

Environmental Protection Agency, (2024). Available at: https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-GHG-Projections-Report-2022-2050-May24--v2.pdf

Eolas Magazine, (2022). 'Pedestrianisation: European case studies.' Available at: https://www.eolasmagazine.ie/pedestrianisation-european-case-studies/

Eurostat (2024). *Passenger Cars – Per Thousand Inhabitants*. Available at: https://ec.europa.eu/eurostat/databrowser/view/road_eqs_carhab/default/table?lang=en

Farrell, (2022). 'Capel Street's traders remain at odds over its pedestrianisation.' Available at: https://www.irishtimes.com/ireland/dublin/2022/09/24/car-free-capel-street-basks-in-its-cool-image-but-traders-are-divided/

Garcia-Sierra et al., (2015) 'Behavioural economics, travel behaviour and environmental-transport policy', *Transportation Research Part D Transport and Environment*, 41, 288-305.

Ginty, (2022). 'Clear majority of businesses and vast majority of public (again) support car-free Capel Street'. Available at: https://irishcycle.com/2022/09/21/clear-majority-of-businesses-and-vast-majority-of-public-again-support-car-free-capel-street/

Hass-Klau, (1993). Impact of pedestrianization and traffic calming on retailing. *Transport Policy*, *1*(1), 21-31.

Ibraeva, (2014). 'Pedestrian Priority Zones in the Context of Urban Mobility and Valorization of Public Space', *Msc., Collage of Human and Social Sciences, University of New Lisboa, Spain.*

International Transport Forum, (2024). *Improving the Quality of Walking and Cycling in Cities*. Available at: https://www.itf-oecd.org/improving-quality-walking-cycling-cities

Judge, (2013). The experiment of American pedestrian malls: Trends, analysis, necessary indicators for success and recommendations for Fresno's Fulton Mall. *Fresno Future*, 1 – 26.

Kahneman Daniel, & Tversky, Amos. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 363-391.

Kahneman, Knetsch, & Thaler. (1990). Experimental tests of the endowment effect and the Coase theorem. *Journal of political Economy*, *98*(6), 1325-1348.

Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. (1991). "Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias." *Journal of Economic Perspectives* 5 (1): 193–206.

Keseru, I., Wuytens, N., De Geus, B., Macharis, C., Hubert, M., Ermans, T., & Brandeleer, C. (2016). Monitoring the impact of pedestrianisation schemes on mobility and sustainability. *Portfolio*, *1*, 87-95.
Kim, U., Lee, J., & He, S. Y. (2021). Pedestrianization impacts on air quality perceptions and environment satisfaction: The case of regenerated streets in downtown Seoul. *International journal of environmental research and public health*, *18*(19), 10225.

Kirmizi, M. (2021). The Mobility of Paris Residents and Retailers: Their Viewpoints on the Effects of the City's Pedestrianization.

Kohn, (2021). 'Deconstructing business sentiment towards pedestrianization: Case study of Sainte-Catherine Street West's temporary pedestrianization project.'

Lades, L. K., Kelly, J. A., & Clinch, J. P. (2020). Encouraging Environmentally Friendly Behaviour with Insights from Behavioural Economics.

Lang et al., (2021). 'Status quo bias and public policy: evidence in the context of carbon mitigation', *Environmental Research*, 16(5), 1-7.

Litman, T. (2014). The mobility-productivity paradox: exploring the negative relationships between mobility and economic productivity.

Livneh, Y. (2019). Overcoming the Loss Aversion Obstacle in Negotiation. *Harv. Negot. L. Rev.*, *25*, 187.

Lowans et al., (2023). 'What causes energy and transport poverty in Ireland? Analysing demographic, economic, and social dynamics, and policy implications.' *Energy Policy*, 172.

Matuke et al., (2020). The rise and fall of the American pedestrian mall, *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, 1 – 15.

McKenzie, C. R., & Nelson, J. D. (2003). What a speaker's choice of frame reveals: Reference points, frame selection, and framing effects. *Psychonomic bulletin & review*, *10*(3), 596-602.

Melia & Shergold, (2016). 'Pedestrianisation and politics: Evidence gaps and a case study of Brighton's Old Town.' *Universi-ties Transport Study Group, Bristol*.

Melia, S., & Calvert, T. (2023). Does traffic really disappear when roads are closed?. In *Proceedings of the Institution of Civil Engineers-Municipal Engineer* (Vol. 176, No. 1, pp. 1-9).

Milkman, K. L., Mazza, M. C., Shu, L. L., Tsay, C. J., & Bazerman, M. H. (2012). Policy bundling to overcome loss aversion: A method for improving legislative outcomes. *Organizational Behavior and Human Decision Processes*, *117*(1), 158-167.

Mosca et al., (2024). 'Promoting a Sustainable Behavioural Shift in Commuting Choices: The Role of Previous Intention and 'Personalised Travel Plan'. *Transportation Research Part F: Traffic Psychology and Behaviour*. 106, 55-71.

National Transport Authority (2023). *National Household Travel Survey*. Available at: https://www.nationaltransport.ie/publications/national-household-travel-survey-2023/.

Nello-Deakin et al., (2024). 'Who's Afraid of Pedestrianisation? Residents' perceptions and preferences on street transformation, 150, 103117.

Nello-Deakin, S. (2024). "Winner" versus "loser" streets? Pedestrianisation and intra-neighbourhood equity. *Journal of Urban Mobility*, *5*, 100074.

Nieuwenhuijsen & Khries, (2016). 'Car Free Cities: Pathway to Healthy Urban Living', *Environmental International*, 94, 251-263.

O'Connor, David, James Nix, Simon Bradshaw, and Enda Shield. 2011. "Shopping Travel Behaviour in Dublin City Centre." University College Cork.

OECD (2022), Redesigning Ireland's Transport for Net Zero: Towards Systems that Work for People and the Planet, OECD Publishing, Paris, https://doi.org/10.1787/b798a4c1-en

O'Driscoll et al., (2024). 'How the relationship between socio-demographics, residential environments and travel influence commuter choices', *Regional Studies*, *58*(3), 636-653.

O' Regan, Ellen (2023). Irish Examiner – *'Cork Outdoor Dining and Pedestrianisation Experiment to Continue'.* Available at: https://www.irishexaminer.com/business/economy/arid-41145883.html

Özdemir, D., & Selçuk, I. (2017). From pedestrianisation to commercial gentrification: The case of Kadıköy in Istanbul. *Cities*, *65*, 10-23.

Parajuli & Pojani, (2018). Barriers to the pedestrianization of city centres: perspectives from the Global North and the Global South. *Journal of Urban Design*, *23*(1), 142-160.

Pojani, (2010). American Downtown Pedestrian "Malls": Rise, Fall, and Rebirth, 173–180. Territorio.

Perlaviciute, G. (2022). Contested climate policies and the four Ds of public participation: From normative standards to what people want. *Wiley Interdisciplinary Reviews: Climate Change*, *13*(1), e749.

Piatkowski et al., (2019). 'Carrots versus sticks: assessing intervention effectiveness and implementation challenges for active transport', *Journal of Planning Education and Research*, *39*(1), 50-64.

Piras et al., (2021). 'Can Persuasive Normative Messages Encourage Sustainable Transportation Usage.' 83, 304 – 322.

Pew Research Centre, (2024). *'1 in 10 Americans rarely or never drive a car'*. Available at: https://www.pewresearch.org/short-reads/2024/11/14/1-in-10-americans-rarely-or-never-drive-a-car/

Poluektova, O., Julienne, H., Robertson, D. A., Braiden, A. K., & Lunn, P. D. (2024). Primacy effects in the formation of environmental attitudes: the case of mineral exploration. *Journal of Environmental Psychology*, *94*, 102248.

Rabaa et al., (2022). 'Why change does (not) happen: Understanding and overcoming status quo biases in climate change mitigation', *Zeitschrift für Umweltpolitik und Umweltrecht*, 45(1), 100-134.

Rock et al., (2016). 'The economic boom, bust and transport inequity in suburban Dublin', Ireland. *Research in Transportation Economics*, *57*, 32-43.

Rock et al., (2021). 'Blackrock and Coastal Mobility Route research'. Available at: https://www.tudublin.ie/media/website/news/2021/main-news/TU-Dublin--DLR-COVID-19-Mobility-Review-FINAL-RESIZED.pdf

Rock et al., (2024). TU Dublin Evaluation & Review of Dundrum Village Covid-19 Mobility & Public Realm Works APRIL 2024 – Issue. Available at: https://www.tudublin.ie/media/website/explore/schools/architecture-building-environment/news/documents/TU_Dub_DLR_Covid_Mobility_Review_Ph2b_Dundrum_0424_Issue.pdf

Sánchez, J. M., Ortega, E., Lopez-Lambas, M. E., & Martín, B. (2021). Evaluation of emissions in traffic reduction and pedestrianization scenarios in Madrid. *Transportation research part D: transport and environment*, *100*, 103064.

Santos, G., Behrendt, H., & Teytelboym, A. (2010). Part II: Policy instruments for sustainable road transport. *Research in transportation economics*, *28*(1), 46-91.

Sassone, (2024). 'Excitement in Galway as Westend prepares to go pedestrian-only again: 'It just makes the summer'. Available at: https://www.independent.ie/regionals/galway/news/excitement-in-galway-as-westend-prepares-to-go-pedestrian-only-again-it-just-makes-the-summer/a615599080.html

Schneider, C. R., & van der Linden, S. (2023). Social norms as a powerful lever for motivating pro-climate actions. *One Earth*, *6*(4), 346-351.

Schreiber, F. (2025). The long road from urban experimentation to the transformation of urban planning practice: The case of tactical urbanism in the city of Barcelona. *Journal of Urban Mobility*, *7*, 100100.

Selmoune, A., Cheng, Q., Wang, L., & Liu, Z. (2020). Influencing factors in congestion pricing acceptability: A literature review. Journal of Advanced Transportation, 2020, 1–11.

Soesbergen, A., & Mulligan, M. (2024). Net impact of London Strand-Aldwych pedestrianisation project on air quality and noise. *Urban Climate*, *58*, 102231.

Soni, N., & Soni, N. (2016). Benefits of pedestrianization and warrants to pedestrianize an area. *Land use policy*, *57*, 139-150.

Strategic Research & Analysis Division, (2023). 'The Economic Cost of Congestion in the Greater Dublin Area 2022-2040'.

Sunstein, C., & Thaler, R. (2009). Nudge: Improving Decisions About Health, Wealth, and Happiness. New York: Penguin Books.

Susskind, L., Chun, J., Gant, A., Hodgkins, C., Cohen, J., & Lohmar, S. (2022). Sources of opposition to renewable energy projects in the United States. *Energy Policy*, *165*, 112922.

Sustainable Mobility Policy, (2022). Available at: https://www.gov.ie/en/publication/848df-national-sustainable-mobility-policy/

Sustrans, (2023). *'Walking and Cycling Index'.* Available at: https://www.sustrans.org.uk/the-walking-and-cycling-index/walking-and-cycling-index-data-tool/benefits-dashboard/

Sustrans, (2023). *'Walking and Cycling Index'.* Available at: https://www.sustrans.org.uk/the-walking-and-cycling-index/walking-and-cycling-index-data-tool/city-data-dashboard/

Timmons et al., (2024). 'Active Travel Infrastructure Design and Implementation: Insights from Behavioural Science', *WIREs Climate Change*, 15(3), 1-21.

Tipperary County Council, (2023). *Irish Town Enhancements'.* Available at: https://www.tipperarycoco.ie/sites/default/files/2023-06/Irish%20Case%20Studies%20on%20Town%20Enhancements.pdf

Verlinghieri, Brovarone, & Staricco., (2024). 'The conflictual governance of street experiments, between austerity and post-politics.' *Urban Studies*, *61*(5), 878-899.

Villani, C., & Talamini, G. (2023). Failed pedestrian street experiments in high-density urban Asia: A matter of policies?. *Journal of Urban Mobility*, *4*, 100069.

Volker & Handy, (2021). 'Economic impacts on local businesses of investments in bicycle and pedestrian infrastructure: a review of the evidence', *Transport Reviews*, 41:4, 401-431.

Wang, X., & Renne, J. L. (2023). Socioeconomics of Urban Travel in the US: Evidence from the 2017 NHTS. *Transportation research part D: Transport and Environment*, *116*, 103622.

Wooller, L., Badland, H. M., & Schofield, G. M. (2012). Pedestrianisation: Are we reading from the same page? Perspectives from key stakeholders in Takapuna, Auckland. *Graduate Journal of Sport, Exercise & Physical Education Research*, *1*(15), 16-30.

Yassin, (2019). 'Livable city: An approach to pedestrianization through tactical urbanism', *Alexandria Engineering Journal*, *58*(1), 251-259.