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smartertravel >>>

Ex-Post Evaluation of Smarter Travel Areas

Final Report | 2018



Ex-Post Evaluation of

Smarter Travel Areas

Executive Summary | 2018

Quality Information

Prepared by:Elaine Brick
*Regional Director*Catherine Swift
*Consultant***Checked by:**Richard Redfern
*Regional Director***Approved by:**Derval Cummins
Director

Prepared for

Department for Transport Tourism
and Sport (DTTAS)

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Prepared by

AECOM Professional Services
Ireland
4th Floor
Adelphi Plaza
Georges Street Upper
Co. Dublin
IrelandT: +353 1 238 3100
aecom.com

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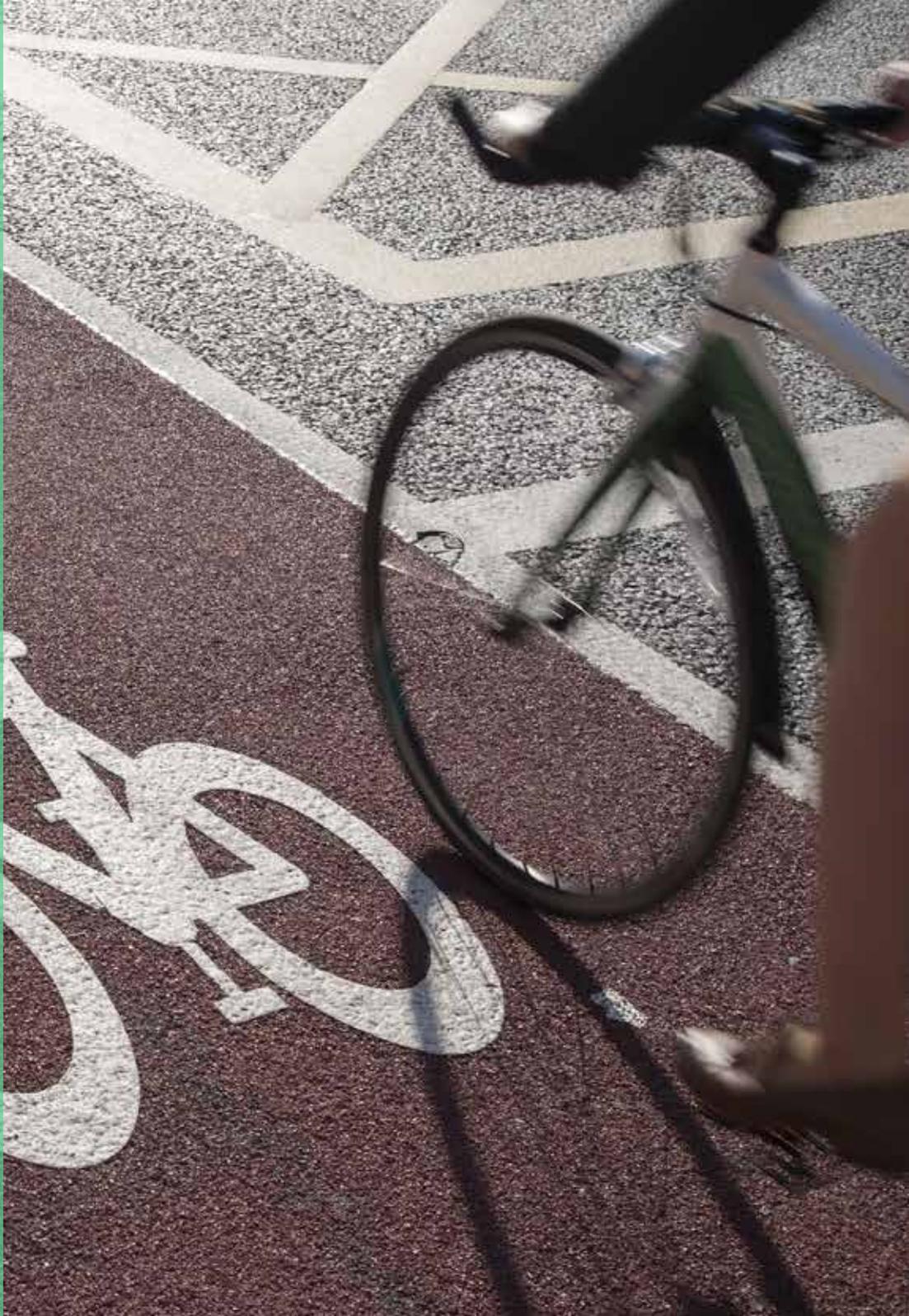
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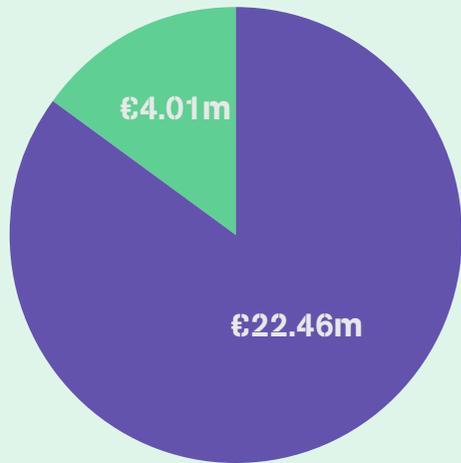
Executive Summary

€26.47m

invested in Smarter Travel Areas 2012-2016

85% invested in infrastructure

15% invested in behavioural change measures



55 Junction upgrades and crossing facilities

6 Public realm enhancement projects

45 participating Smarter Travel Schools



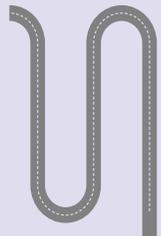
13 Limerick Smarter Travel Workplace and Campus Partners

100+ Challenges, events and campaigns as well as local and social media coverage



17km of new/upgraded Greenway routes

14km of other cycle facilities



54% of the total quantified project benefits are health related

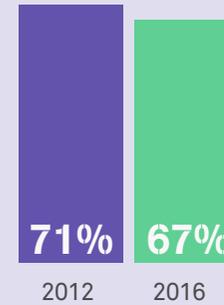
1.3 Benefit / Cost Ratio of 1.3

Change in Mode Share

All Smart Travel Areas / All Trips

Car Mode Share

Car mode share decreased from 71% in 2012 to 67% in 2016 – despite an increase in employment in all STAs and a change of -0.8% in the control area



-12.1pp
Decrease in car mode share within Socio Economic Group E

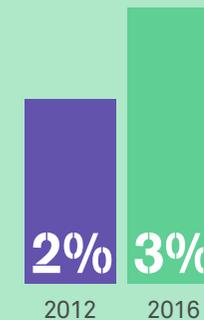
Walking Mode Share

Walking mode share increased from 20% in 2012 to 25% in 2016 compared to an increase of 0.2pp in the control area



Cycling Mode Share

Cycling mode share increased from 2% in 2012 to 3% in 2016 compared to an increase of just 0.1% in the control area



47% of survey respondents who cycle say they are cycling more in 2016 than the previous year

Cycling mode share 2016 by gender/change 2012-2016



Male

5%/
+1.5pp



Female

1.5%/
+0.3pp

Introduction



The Smarter Travel Areas (STA) Pilot Programme was launched by the Department of Transport, Tourism and Sport (DTTAS) in 2012. The objective of the programme was to pilot a range of sustainable travel measures aimed at achieving modal shift from private car to sustainable travel modes such as walking and cycling. Following a competitive bidding process, funding of €21.20 million was awarded to the three successful demonstration towns – Limerick, Dungarvan and Westport. A package of both infrastructural and behavioural change measures was delivered in each of these areas between 2012 and 2016.

Purpose of the Evaluation



Given the demonstration town status of each of the three STAs, monitoring and evaluation was a fundamental component of the pilot to ensure a clear understanding of how investment impacted on travel behaviour. As such, a robust evaluation programme was developed by DTTAS and has been implemented across the five year delivery programme. The evaluation was led by AECOM, with support from each of the STAs, and was the largest of its kind undertaken in Ireland involving comprehensive data collection, monitoring and analysis.

Programme evaluation was ongoing over the lifetime of the STA programme, with monitoring reports prepared every six months, and an Interim Report prepared at the half-way point of the programme in 2015. This Final Report provides a comprehensive review of programme delivery and investment impacts over the entire lifetime of the project, from 2012 until the end of 2016.





Evaluation Methodology

A bespoke evaluation approach was established which combined the development of a Theory of Change for the programme by each STA, alongside the selection of a suitable control and supporting datasets. The development of a Theory of Change supported the systematic testing of the assumed connections (i.e. the theory) between an STA intervention and its anticipated impacts. The focus of the approach was therefore not only on understanding whether an intervention had worked but also on why and under what conditions change had been observed.

The most important quantitative data source used in the evaluation was a Household Travel Survey (HTS). The HTS was first conducted in October 2012 in advance of the STA programme investment taking place. A follow-up survey was conducted in October 2014 and a final survey was undertaken in October 2016. The HTS was conducted among a random, representative sample of people within each of the STAs (with an overall sample size of over 5,500 respondents). It was comprised of three sections: a 24 hour travel diary which collected information about journey purposes, travel modes, time of travel and distance travelled; an attitudes and awareness survey which collected information about the attitudes of respondents towards local travel and sustainable transport; and a socio-demographic survey.

AECOM used comparative datasets to further understand the STA programme outcomes and impacts. First, the findings of the HTS were compared against a national level comparator dataset (the National Travel Survey), to provide context to the observed outcomes. This provided an indication of what might have happened within the STAs if the programme of investment hadn't been made i.e. the counterfactual scenario. Secondly, a telephone administered survey was undertaken with an independent sample of residents across Ireland, for comparison with the attitudinal element of the HTS. Thirdly, comparison areas adjacent to the three STAs have been used to assess changes in business and economic indicators, particularly footfall and business closures.

Additional quantitative data examined as part of the evaluation included:

- Vehicle, pedestrian and cyclist movement counts on key routes;
- Car and cycle parking occupancy rates;
- Road safety statistics; and
- Economic activity data including footfall counts, business occupancy rates, town centre intercept surveys and business sentiment surveys.

A qualitative research programme was also developed with the aim further analysing the reasons for modal shift, barriers to modal shift, additional measures that might be required to encourage modal shift and the issues and opportunities experienced in implementing sustainable travel measures. The programme included:

- Focus groups to understand the behaviours and perceptions of key target groups – commuters, parents of school children, students, and ‘challenge’ participants, as well as people involved in local businesses;
- In-depth interviews with the STA delivery teams and key target organisations – schools, businesses and the University of Limerick;
- Route intercept surveys of users of the greenways to enhance understanding of how these facilities are used and perceived;
- Attendance at a number of Smarter Travel events to understand the profile of attendees and the impact of events in influencing travel behaviour through informal observation/conversation and intercept surveys;
- Independent audits of cycling infrastructure were undertaken in all STAs, with consideration of the National Transport Authority’s Cycle Manual;
- Community cycling audits, whereby members of the public were escorted by bike around STA cycle networks to further understand perceived safety issues, with accompanying travel pattern and attitude surveys;
- Bespoke on-line surveys to provide insight into the views of specific target groups; and
- Media monitoring to gauge how Smarter Travel is being portrayed in the media and how it may influence community views of the programme as well as modal shift.



Programme Delivery 2012–2016



DTTAS allocated €21.20m across three participating STAs and an additional €5.27m was invested in the programme by a range of stakeholders, resulting in a total programme investment of €26.47m. Approximately 85% was invested in infrastructure improvements and the remaining 15% in behavioural change measures, including staff and operational costs.

Among all three STAs, infrastructure spend was focused heavily on the provision of off-road cycle facilities, greenways in particular. Overall, approximately 17km of greenways and

14km of other cycling facilities (incl. shared footpaths, cycle tracks and on-road cycle lanes) were delivered, as well as a range of traffic calming projects, junction improvements and bike parking. The behavioural change measures implemented were focused on trip-end locations, such as workplaces, schools and campuses. The extent of behavioural change measures delivered varied between the STAs.

A summary of the programmes delivered in each area is presented in the following sections.

Dungarvan

'Go Dungarvan' received €7.20m of DTTAS Smarter Travel funding. Over three quarters of this (€5.81m) was invested in infrastructure, with the remainder (€1.39m) on behavioural change measures. In addition, €3.20m was invested by Waterford County Council and other stakeholders bringing the total spend to €10.40m.

A significant amount of new infrastructure was delivered in Dungarvan, including new cycling and pedestrian facilities (4.8km of greenways and 9km of other on/off road facilities), traffic calming, public realm improvements and new 'trip end' facilities.

The largest project, in financial terms, was the redevelopment of Grattan Square within Dungarvan town centre. The Square was redesigned to follow a shared space concept, improving the visual appearance of the space,

delivering improved pedestrian access to adjacent streets, reducing street clutter and creating additional public space.

Another high profile project in Dungarvan was the redevelopment of the 'The Track' (an old route along a disused railway line) to form a 4km high quality greenway. The greenway links the edge of the town centre with residential areas to the east of Dungarvan and also formed the first section of the Waterford Greenway.

The majority (75%) of the Dungarvan behavioural change budget was expended on staff and other operational costs. School travel planning was the main focus of the behavioural change programme with all primary and secondary schools in the town involved.



Go Dungarvan Infrastructure Measures and participating Smarter Travel Schools



Limerick

Limerick Smarter Travel received €9m of DTTAS Smarter Travel funding. In addition, €1.30m was invested by Limerick City and County Council and other stakeholders bringing the total spend to €10.30m.

Over three quarters of the funding was invested in infrastructure projects and the remaining on behavioural change measures and resource costs.

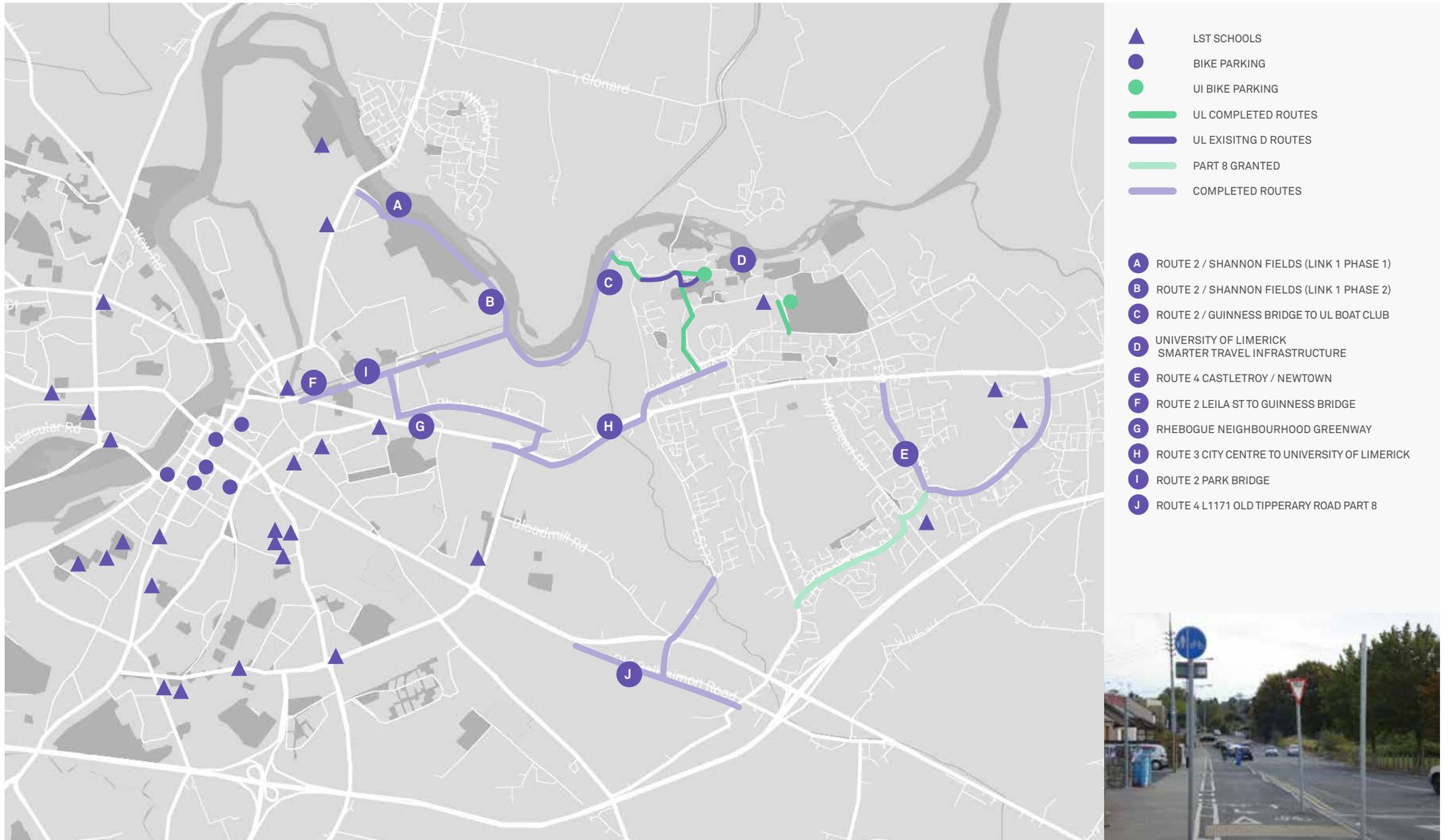
A significant amount of new infrastructure was delivered in Limerick, including over 9km of greenways, cycle lanes and tracks, as well as traffic calming, junction improvements and new crossings. Good quality bike parking was provided, particularly in the city centre and at the University of Limerick (UL). A large proportion of investment was concentrated on greenways linking the City Centre and UL, and on walking and cycling facilities in the Castletroy area.

The largest infrastructure project, in financial terms, was the delivery of 'Route 2'; a high-profile 5.1km greenway along the southern banks of the River Shannon.

Limerick invested more, proportionately, on behavioural change measures than Dungarvan and Westport. A comprehensive programme of measures was delivered encompassing schools, workplaces, campuses and the wider community. The Schools Programme targeted 30 schools across the STA, while seven organisations with a combined ~8,000 employees signed up as Workplace Programme partners. The Campus Programme achieved buy-in from three third-level institutions and two further education campuses. Events were the most significant aspect of the Community Programme and the largest events each year were held during National Bike Week, which was branded locally as 'BeSpoke – Limerick's Cycling Festival'.



Limerick Smarter Travel Infrastructure Measures





Westport

Westport Smarter Travel (WST) received €5m of DTTAS Smarter Travel funding. In addition, €770,000 was invested by Mayo County Council and other stakeholders bringing the total spend to €5.77m. Over 95% of the DTTAS funding allocation was invested in infrastructure projects and the remaining 5% on behavioural change measures.

The WST infrastructure investment was focused on the expansion of the town greenway network. Overall, 7km of new greenway infrastructure was delivered, providing a traffic free route for walking and cycling with direct connections to two primary schools, one secondary school and the town's main employer, Allergan.

To complement the town greenway, investment was also made in on-road cycle lanes, with approximately 1.6km provided on the Castlebar Road and Altamount Street. WST also invested in public realm improvements and traffic calming, mainly within the town centre and at The Quays.

The WST behavioural change campaign was given the title 'Winning Hearts and Minds' and included general promotion and branding activities, school activities, workplace travel planning and a community engagement programme. Events were a key part of the campaign, with a wide range of community events organised to promote an awareness of Smarter Travel particularly during the 'Spring

Forward' festival and European Mobility Week. Some examples of events organised include: 'Bike Buffet' events; greenway walks and cycles; 'Westport Walks Weekdays' promotions; and 'Park(ing) Day' (where a parking space is temporarily transformed into a mini parklet by community groups).



Westport Smarter Travel Infrastructure Measures





Key Evaluation Findings

Modal shift from 2012-2016 was higher in the Smarter Travel Areas than in the national control sample

A key objective of the STA programme was to achieve modal shift from private car travel to sustainable transport. The impact of STA investment in this regard was primarily monitored through the travel diary component of the HTS undertaken in each of the STAs. Results from the National Travel Survey (NTS) were used as a national control.

Results of the HTS for 'all trips' within the STA show that between 2012 and 2016:

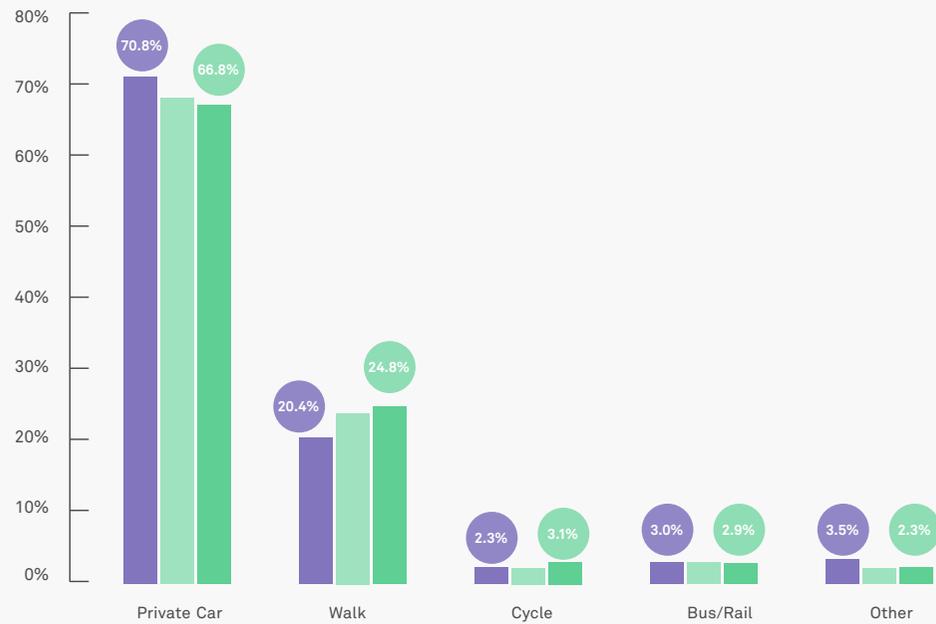
- Car mode share in the STAs decreased by 4.0pp to 66.8%. By comparison, at a national level, the car mode share for 'all trips' taken from the 2016 National Travel Survey (excluding Dublin) reduced by 0.8pp over the same period.
- Walking mode share increased by 4.4pp to 24.8%. This increase is notably higher than the 0.2pp increase observed nationally.
- Cycling mode share increased by 0.8pp to 3.1%. The increase observed in the STAs was, again, higher than the 0.1pp increase observed nationally.

The HTS results were also assessed by trip type. With regards employment trips, results of the HTS showed that:

- Between 2012 and 2016, the private car mode share decreased by 4.3pp to 76.1%.
- Walking mode share increased by 2.9pp to 14.9%.
- Cycling mode share increased marginally by 0.8pp to 3.0%.

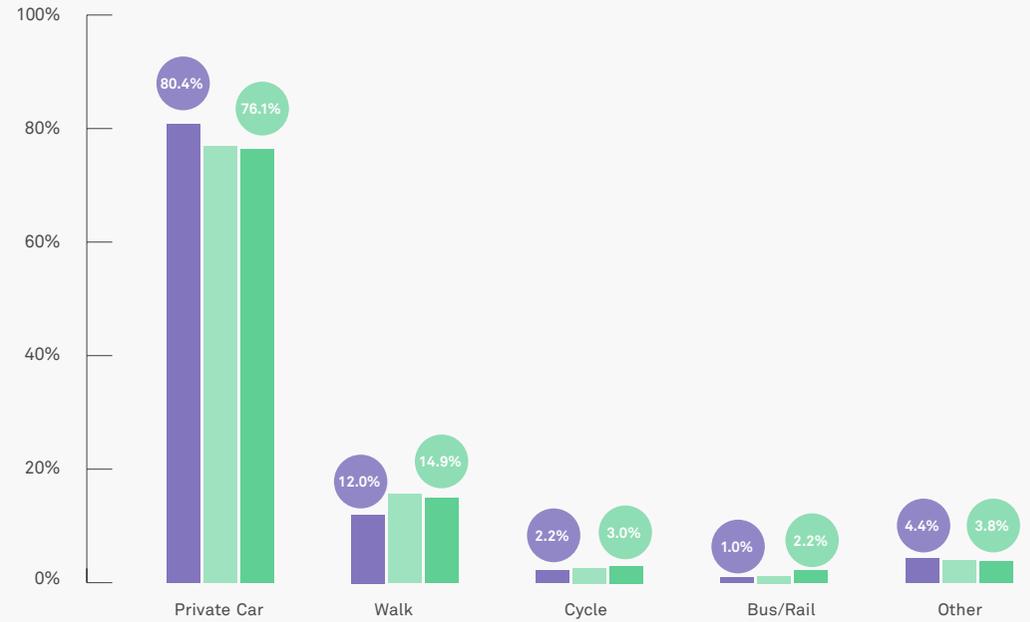
A direct comparison of mode share for commuting journeys only with the NTS is not possible as the journey purpose of 'work' in that survey includes both commuting and business travel. As such, the HTS results have been recategorised to include commuting and business trips. The results indicate that the reduction in private car mode share nationally for 'work' trips was -0.2pp, substantially lower than the reduction in car mode share in the STAs of -1.7pp. The combined increase in walking and cycling mode share observed across the STA programme for these trips (+4.4pp) also contrasts with the national control where a decrease of -0.4pp in combined walking and cycling mode share was observed.

STA Programme Level Modal Shift, All Trips, 2012-2016



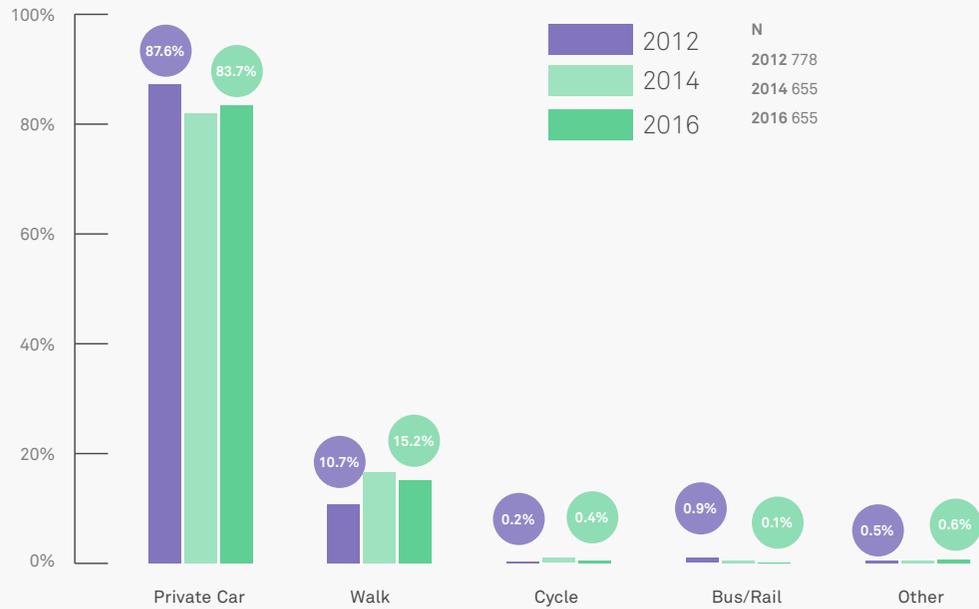
2012 N
 2014 2012 13098
 2016 2014 12214
 2016 2016 13084

STA Programme Level Modal Shift, Employment Trips, 2012-2016



2012 N
 2014 2012 1394
 2016 2014 1297
 2016 2016 1490

STA Programme Level Modal Shift, Escorted Education Trips, 2012-2016



As the HTS could not be undertaken by persons under 18 years of age, the survey only captures 'escorted education trips' which are those taken by persons over 18 to accompany others to education. For these trips, results of the HTS show that:

- Car mode share decreased by -3.9pp from 87.6% in 2012 to 83.7% in 2016.
- The largest decrease occurred between 2012 and 2014 when car mode share decreased to 81.9%.

A national control for this data is not available.

Finally, the HTS results provide evidence of modal shift for non-commuting trips as follows:

- Car mode share in the STAs decreased by 3.0pp to 64.4%. By comparison, at a national level, the car mode share reduced by 0.1pp to 79.7% over the same period.
- Walking and cycling trips increased by 6.2pp to 30.7%. This increase is notably higher than the 0.1pp increase observed nationally.



STA Programme Level Modal Shift, Employment Trips, 2012-2016

	STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	75.5%	-1.7	81.5%	-0.2	73.1%	-1.5
Walk / Cycle	16.8%	<u>4.4</u>	6.6%	-0.4	11.8%	1.8
All Other	7.7%	<u>-2.7</u>	11.9%	0.6	15.1%	-0.4

STA Programme Level Modal Shift, Non-Commuting Trips, 2012-2016

	STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	64.4	<u>-3.1</u>	79.7%	0.1	72.8%	-1.6
Walk / Cycle	30.7%	6.2	15.5%	0.1	19.7%	1.3
All Other	5%	-3.1	4.9%	-0.2	7.5%	0.3



Smarter Travel investment has had a very positive impact on the participating towns

The STA Pilot Programme has had a very positive impact on the quality of life of participating communities. The attitudes and awareness component of the HTS indicates that the STAs are now considered to be more accessible by non-motorised modes, more pleasant to walk and cycle in and, importantly, safer for pedestrians and cyclists. This indicates that key barriers to the use of sustainable transport modes have in part been overcome by the STA programme investment.

The reported changes in residents' attitudes and perceptions of their local environment has contributed to increased levels of walking and cycling which in turn has generated significant health benefits from increased levels of physical activity. The reported additional physical activity across the STAs was calculated as an economic benefit of €1.4m in nominal terms in 2016.

The observed shift from car to more sustainable modes has also contributed to environmental benefits within the STAs. Although the number of car-based commuter journeys remained relatively constant between 2012 and 2016, there was a reduction in car use for other trip purposes. The reduction in car journeys (465 fewer private car trips were taken in 2016 compared to 2012 levels (in absolute terms), resulted in non-fuel vehicle operating costs avoided of €0.14m per annum and total fuel costs avoided of €0.16m per annum in nominal terms. In addition, emissions savings for CO₂, NO_x and PM resulted in estimated savings of €0.01m nominally in 2016.

A potentially negative impact of the programme identified during the planning stage was a reduction in economic activity resulting from the anticipated modal shift. However, evidence from footfall surveys, on-street surveys and interviews with local businesses shows that there was little or no negative impact on the local economies.

When considering the quantified economic benefits of the programme for the STAs, a Benefit/Cost Ratio of 1.31 was calculated.



An integrated package of both infrastructure and behavioural change measures is most likely to achieve modal shift

Each of the three STA programmes comprised a mixture of both infrastructure and behavioural change measures. The evidence suggests that this is a reasonable approach to take in other areas, especially on the basis of the need to address existing low levels of infrastructure provision, particularly for cyclists and the demonstrated positive impact and cost effectiveness of behavioural change measures. Naturally, the scale of impact will depend on the quality of both the infrastructure and behavioural change measures delivered.

Poor perception of safety is the biggest barrier to increasing cycling mode share

Safety concerns were a consistent theme throughout the evaluation, to the extent that it is the most significant barrier to increasing cycling. The perception of cycling safety varies significantly depending on the infrastructure provided with segregated infrastructure offering the highest perceived level of safety. However, on the basis that completely segregated infrastructure cannot reasonably be provided across a full urban network, it is recommended that the provision of cycle training is expanded in schools and workplaces.



Other key barriers to modal shift:

- Low levels of cycling confidence.
- Attitude to car use.
- Inertia.
- Practical barriers such as trip chaining and the need to carry heavy equipment.
- Weather.





Greenways have had a very positive impact on the STAs but have not encouraged modal shift for commuting trips

Despite the positive feedback received on the facilities, greenways have not been successful in achieving the overarching aim of encouraging modal shift for commuting trips. Across each of the STAs, the peak volume of both cyclists and pedestrians using the facilities was either at midday or in the evening after the main commuting period.

It is recommended that while opportunistic, the limitations of utilising pre-existing infrastructure to deliver greenways needs to be acknowledged. If the overarching objective for delivery of a scheme is to encourage commuting, then this needs to be embedded within overall planning and design from the early stages of delivery. It is easier to construct greenways along pre-existing facilities such as railway corridors; however, if this route does not reflect commuting desire lines then the facility is unlikely to have an impact on commuting trips. In addition, it is imperative that the facilities delivered are marketed to target communities on the basis for which they were intended, be it for commuting or tourism.

On-road cycling infrastructure has not encouraged modal shift

On-road cycling infrastructure delivered across the STAs has not demonstrated an impact on modal shift. Automatic traffic counters close to the delivered facilities do not demonstrate a positive change in cyclist numbers and qualitative feedback suggests that this type of infrastructure results in poor perceptions of safety, with many participants suggesting that investment in on-road cycling facilities is counter intuitive to increasing cycling. The evidence suggests that, where possible, segregated cycling infrastructure should be provided.



Behavioural change measures have a positive impact but need to be delivered in a more focused way

Behavioural change measures formed a key component of each STA programme and there is evidence that they had a cost effective and positive impact on the observed change, especially within schools, workplaces and campuses. Despite positive feedback on many aspects of behavioural change outcomes, there is evidence from all STAs that this element of the programme sometimes lacked the focus and experience needed to maximise impact.

Walking has increased more than cycling in response to investment

Throughout delivery of the STA programme there was a bias towards delivery of both infrastructure and behavioural change measures targeting cycling. Despite this, in all areas, walking experienced the highest level of shift at a programme level. This experience suggests that more focused investment on increasing walking for short trips may be an easier quick win in reducing car mode share. In parallel, investment in appropriate infrastructure and behavioural change measures to encourage cycling could be made, which is possibly a longer term objective.

The evidence points to the need for more targeted and focused delivery of behavioural change programmes and greater training and guidance for those delivering behavioural change programmes. None of the STAs developed a segmented approach to delivering behavioural change measures. The funding was invested across the community equally without recognition of the willingness or ability of various sectors within it to change. This resulted in some research participants concluding that Smarter Travel was sometimes 'preaching to the converted' instead of focusing on other cohorts of the community that might demonstrate a willingness to change but haven't engaged with the programme.



Achieving greater modal shift for school trips will require a cross government response

Across all STAs, the feedback received on behavioural change interventions delivered in schools has been overwhelmingly positive, particularly with regards to the cycle training and challenges delivered. There is evidence that this programme improves awareness and confidence among participating students and that it has influenced the mind-set of parents who, despite safety concerns, have increased leisure walking and cycling at least. However, success of the School Travel Programme would be enhanced by more cross-Government support in a number of areas such as reducing the need for multiple and heavy school books, reducing travel distances for school trips and health promotion.

Programme and project management has a direct impact on programme outcomes

While the evaluation was commissioned to focus specifically on programme outcomes and impact, a number of important observations were made which provide important lessons learnt for future management of similar programmes. These include the need to:

- Incorporate legacy within delivery programmes.
- Ensure continuity of delivery teams, to maintain strong relationships with key stakeholders.
- Gain strong commitment to deliver measures that may inconvenience drivers but benefit pedestrians, cyclists and the wider community.
- Gain strong commitment for the delivery of behavioural change measures with supporting staff training if necessary.
- Ensure that innovative measures are well scoped out to ensure that there is a clear understanding of their potential benefits prior to implementation.

Conclusion

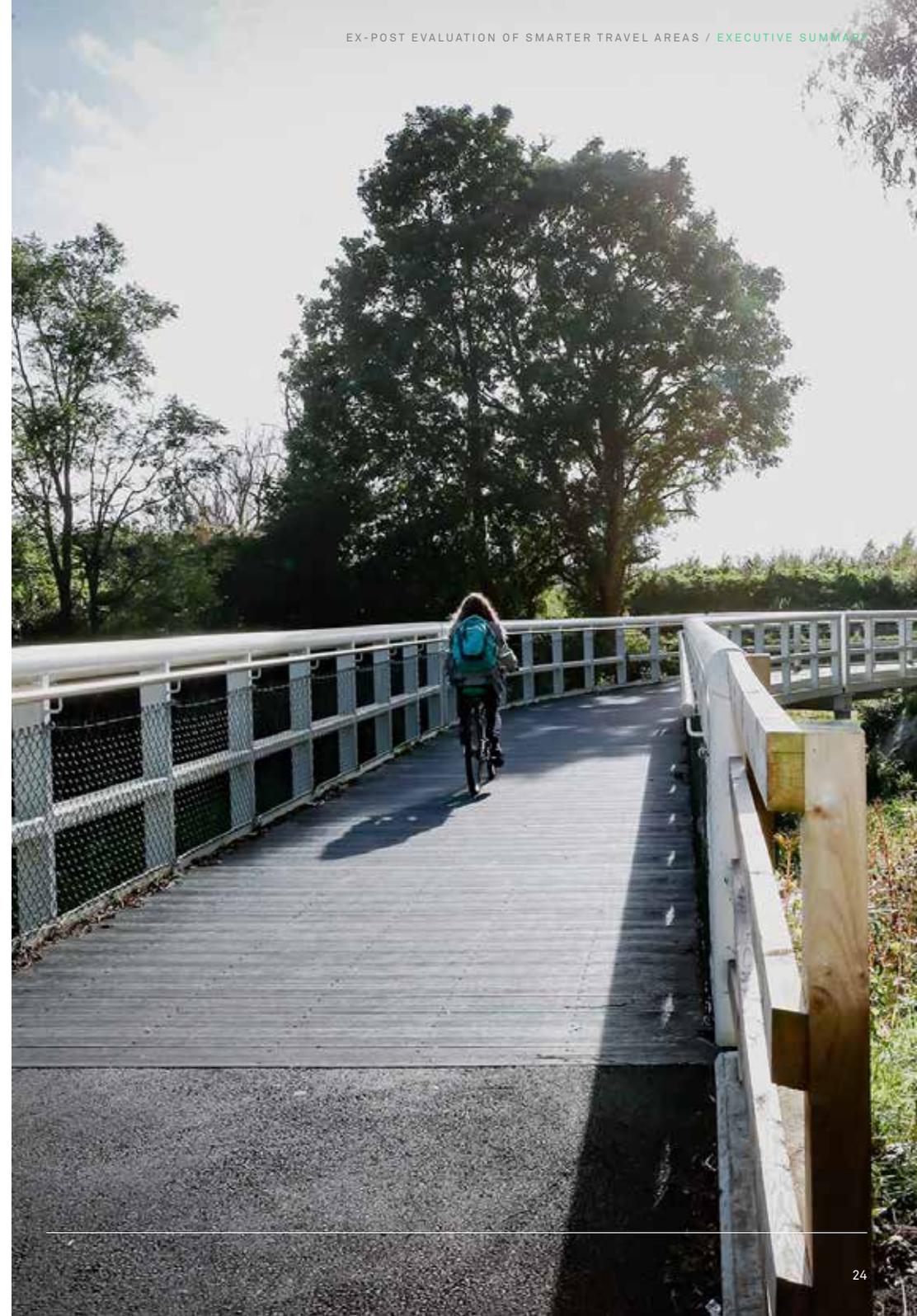
The two key objectives of the Smarter Travel Programme were to ‘transform areas through modal shift’ and ‘improve quality of life’. In terms of modal shift, although the level of change was reasonably low, it is still higher than changes within the national control. Furthermore, quality of life within in the STAs has improved, mainly as a result of the improved amenity presented by infrastructure investment.

It is difficult to attribute the modal shift identified to specific measures as the observed change is most likely a response to the package of measures which has been delivered. Investment in infrastructure has resulted in improved perceptions of the environment for walking and cycling and there are indications through both the HTS and qualitative research that improvements in infrastructure have influenced increased walking and cycling. Similarly, there is evidence that behavioural change measures have had an impact on influencing modal shift, especially within schools and through campaigns and organised challenges.

Naturally, the scale of impact will vary depending on the receiving environment. Where a reasonable level of cycling infrastructure is already provided it is recommended that behavioural change measures are implemented such as cycle training and active travel campaigns. However, in areas where infrastructure is deficient and badly perceived by the community, making improvements in this area should be a first priority with behavioural change measures delivered in parallel.

Delivery of similar programmes elsewhere should present similar benefits, indeed it is likely that programmes in other areas could achieve a more positive impact, assuming that the lessons learnt from this pilot programme are taken into account.

Greater impact may also be achieved through a greater commitment to smarter travel interventions at a local level. Across all three STAs, committed schemes which were perceived as inconveniencing drivers, such as reallocation of road space, removal of parking spaces and reduction of speed limits were not delivered as part of the programme. With strong local authority commitment, future programmes may have more conviction to implement measures which may prove unpopular with drivers, but which will benefit users of sustainable modes.



1

Introduction



1.1 Overview of the STA programme

In 2012, the Department of Transport, Tourism and Sport (DTTAS) launched the Smarter Travel Areas Programme with the objective of piloting a range of sustainable travel measures to influence modal shift from the private car to sustainable travel modes, particularly walking and cycling.

Funding of €21.20m¹ was granted to the three successful demonstration towns – Limerick, Dungarvan and Westport – who had bid competitively for their share of the funding. The three towns were selected on the basis of high-scoring bids that set out detailed plans for investment and were supported by the community and local authority. An additional €5.27m in funding was invested in the programme by a range of stakeholders, including the managing local authorities, resulting in a total programme investment of €26.47m.

Given the demonstration town status for each of the three Smarter Travel Areas (STAs), monitoring and evaluation was a fundamental component to provide a clear understanding of how investment impacted on travel behaviour. As such, a robust evaluation programme was developed by DTTAS and was implemented across the five year delivery programme. The evaluation was led by AECOM, with support from each of the STAs, and was the largest of its kind undertaken in Ireland to-date involving comprehensive data collection, monitoring and analysis.

The Ex-Post Evaluation of STAs investigates the impact of the programme and presents an analysis of changes in travel patterns and attitudes in each STA, the wider outcomes of the programme, lessons learned and transferable measures. The evaluation is presented in this report as follows:

- **Section Two:** Approach to Evaluation, providing an overview of the methodologies adopted for the ex-post evaluation, including the use of theory-based evaluation techniques and comparator datasets. This section also provides a summary of the quantitative data collected and qualitative research undertaken;
- **Section Three:** Programme level outcomes 2012-16, summarising the observed change in mode share for a range of trip purposes. This sections provides an overview of key modal shift for employment, education, leisure and all trips at the STA programme level, including the net change when taking into account changes in travel behaviour at the national level;
- **Section Four:** Dungarvan STA overview, building on Section Three, including a detailed presentation of which interventions were delivered, where and with what outcomes. This section explores the contribution of specific interventions and packages to the observed changes in mode share;
- **Section Five:** Limerick STA overview, presenting the same information as Dungarvan;
- **Section Six:** Westport STA overview, presenting the same information as Dungarvan;
- **Section Seven:** Programme impacts, including a summary of the contribution of different types of intervention to observed mode share across the three STAs, how the observed change compared to other smarter travel programmes from around the world, and an assessment of the impacts of the programme on quality of life, health, safety and the economy;
- **Section Eight:** Lessons learnt for the future on the design and delivery of smarter transport programmes, to support the design, delivery and management of effective investment; and
- **Section Nine:** A concluding commentary to the key evaluation questions is presented.



¹ The DTTAS funding of €21.2m represented a cut of almost 60% in the anticipated programme funding which was originally intended to be €50m but was cut during the economic downturn.

2

Evaluation Approach



2.1 Overview

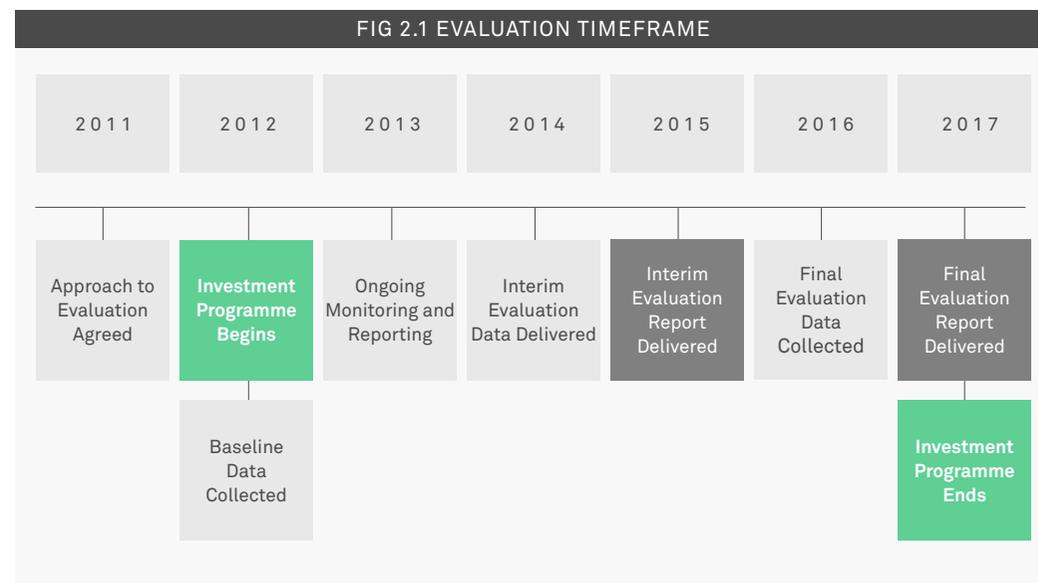
Evaluation of the STA programme was a continuous process, from a pre-investment baseline in 2012 through to the ex-post evaluation in 2017. The evaluation aims to understand the outcomes and impacts of investment in Smarter Travel in each area, and to identify lessons for future investment.

Evaluation of the STA programme has included a range of reporting activities, including six-month and annual data reports, an Interim Report published in 2015, and this Final Report. A summary of the evaluation programme is shown in Figure 2.1

2.2 Key Evaluation Questions

At the outset of the evaluation, a set of key evaluation questions was established to steer the delivery approach and to ensure that all relevant data was collated. At a programme level, the key evaluation questions were:

- To what extent have the anticipated objectives of the programme been achieved?
- How does the level of change in mode share in STAs compare to the control during the same period?
- What is likely to have contributed to the difference in level of change between the control and the STAs?
- What are the main barriers to achieving the objectives? How (if at all) have these been overcome?
- What measures have been most successful in achieving the programme objectives?
- Which measures are transferrable to other communities?
- Which target groups were most responsive (in terms of behaviour change) to the measures implemented?
- How should authorities focus investment to achieve maximum results?



2.3 Evaluation Approach

Due to the complexity of the STA programme a bespoke evaluation approach was established. This combined the development of a Theory of Change for the programme and each STA, with the selection of suitable comparator areas and datasets.

The development of a Theory of Change facilitated the systematic testing of assumed connections (i.e. the theory) between an STA intervention and the anticipated outcomes and impacts. The focus of the approach was therefore not only on understanding whether an intervention had worked but also on why and under what conditions change had been observed.

In addition to the Theory of Change, AECOM used two comparative approaches to further understand programme outcomes and impacts, as follows:

- The findings of the Household Travel Survey (HTS) were compared against a national level comparator dataset, the National Travel Survey (NTS), to provide context to the observed outcomes. The 2011 and 2016 Census datasets have also been used. These sources provide an indication of what might have happened within the STAs if the programme of investment had not been made i.e. the counterfactual scenario;
- A telephone administered survey was undertaken with an independent sample of residents across Ireland, for comparison with the attitudinal element of the HTS; and
- Changes in business and economic indicators, particularly footfall and business closures, have been assessed in areas adjacent to the three STAs.



2.4 Data Collection/ Collation

An extensive programme of data collection was put in place across the programme and each of the three STAs, including a combination of quantitative and qualitative approaches. These are summarised below.

Quantitative Research Programme:

- **Household Travel Survey (HTS):** An extensive survey of STA residents was completed in 2012, 2014 and 2016. This forms the primary source of data for the evaluation and comprises: household/demographic information, a one day travel diary based on the NTS and attitudinal questions. Throughout this report, statistically significant changes in the HTS/NTS results from 2012-2016 are indicated by underlining.² In the presentation of HTS data in tables throughout the report, the heading 'STA' refers to programme level results, i.e. combined data from surveys in all three Smarter Travel Programme Areas only.
- **Movement Data:** One day surveys including pedestrian, cyclist and vehicular counts at key sites within each of the STAs were undertaken in Spring and Autumn each year;
- **Road Safety data:** Monitoring of collisions by mode and severity using the latest available Road Safety Authority database;

- **Economic Activity Monitoring:** Footfall counts, town centre intercept surveys and business surveys were undertaken to assess the local economic impact of investment; and
- **Comparator Data:** As noted above, the NTS has been used as a national comparator dataset, with data used from 2012, 2014 and 2016. In addition, the results of the 2011 and 2016 Census have been used to analyse changes in travel patterns for trips to work and education for each STA and nationally. A telephone administered survey undertaken with an independent sample of residents across Ireland (AAS Control) provided data for comparison with the attitudinal sections of the HTS. Finally, urban areas neighbouring the STAs have been used as comparators³ for the monitoring of economic impact.

Qualitative Research Programme:

- **Focus Groups:** Almost 40 focus groups were held across the STAs to understand the behaviours and perceptions of key target groups – commuters, parents of school children, student, and 'challenge' participants, as well as representatives from the local business community;
- **In-Depth Interviews:** Thirty five interviews were undertaken with the STA delivery teams and key target organisations – schools,

businesses and University of Limerick;

- **Route Intercept Surveys:** Hundreds of surveys of greenway users were undertaken across the STAs to enhance our understanding of how these facilities are used and perceived;
- **Events:** AECOM attended nine Smarter Travel events to understand the profile of attendees and the possible effectiveness of events to influence behavioural change;
- **Cycle Network Quality Audits:** Independent audits of cycling infrastructure were undertaken in each STA, with consideration of the National Transport Authority's Cycle Manual;
- **Community Cycling Audit:** Members of the public were invited to participate in bike audits to understand the perceived safety issues on upgraded routes;
- **Bespoke Surveys:** Hundreds of on-line surveys were completed by target groups to understand more about the impact of specific measures; and
- **Media Monitoring:** Used to gauge how Smarter Travel is being portrayed in the media and how it may influence community views of the programme as well as modal shift.



More detailed information on the evaluation approach and data sources can be found in Appendix A.

² Significance testing has been applied to identify where differences in proportions or means are greater than what would be expected by chance, at the 95% confidence level. Designation of data as statistically significant refers to the significance of year-on-year (e.g. 2012 to 2016) increases/decreases and does not indicate that differences described between the STA and the comparator samples or between groups such as different genders or socio-economic groups are statistically significant, unless clearly stated. Statistical significance of external data (such as the CSO NTS data) is not indicated in this way and so the absence of underlining in these cases does not necessarily indicate that these figures are not statistically significant.

³ For Dungarvan, the comparator was Youghal and Clonmel, for Limerick STA other areas of Limerick city were used and for Westport Castlebar was used.

3

Programme
Level
Outcomes
2012–2016



3.1 Overview

This section provides an overview of the gross level of change in mode share at the programme level (i.e. the combined results from all STAs) between 2012 and 2016 based on the HTS results only. The overall net change in mode share is also presented using the comparator dataset of the National Travel Survey.

The observed change in modal share across each mode is presented for the following trip purposes:

- All trips;
- Employment trips;
- Education trips; and
- Non-commuting trips.

The HTS results for each individual area are presented in more detail in subsequent sections as well as the results of other quantitative and qualitative research.

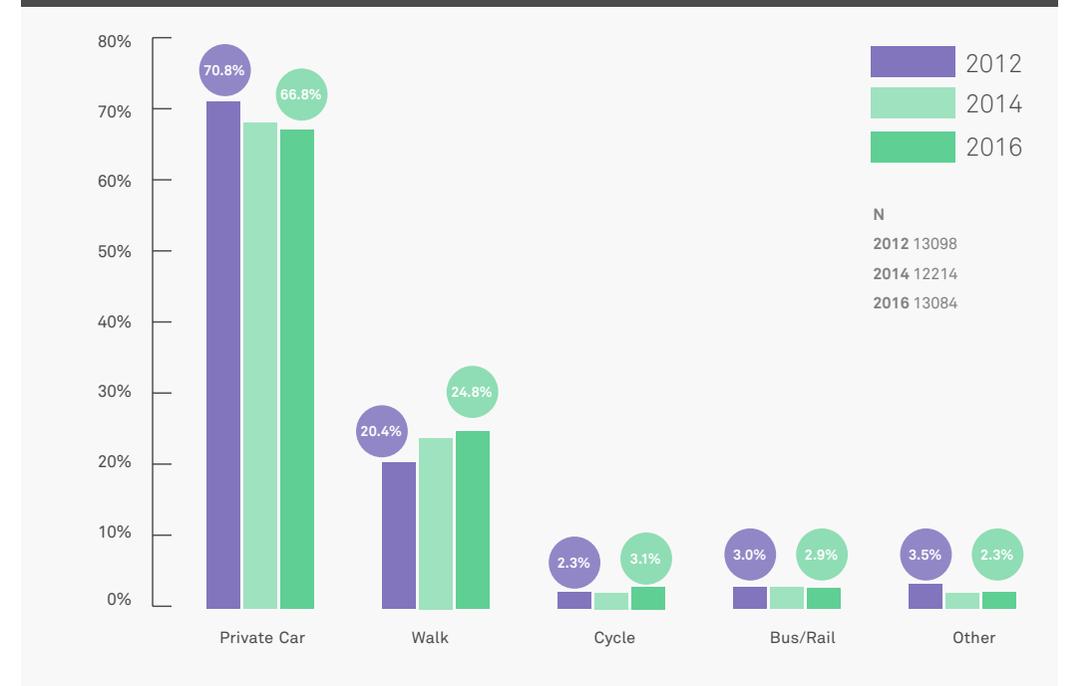


3.2 All Trips

The change in mode share at a programme level for all trips is presented in Figure 3.1. Car mode share changed by -4.0 percentage points (pp)⁴ from 70.8% in 2012 to 66.8% in 2016. The largest proportion of this change occurred up to 2014 when car mode share was reported at 67.7%. Trips on foot from 2012 to 2016 increased by +4.4pp from 20.4% to 24.8%. A large proportion of this change also occurred between 2012 and 2014 when walking mode share was 22.4%.

Between 2014 and 2016 the additional change in walking mode share was therefore just +0.4pp. Cycling mode share increased by +0.8pp, from 2.3% in 2012 to 3.1% in 2016.

3.1: STA PROGRAMME LEVEL MODAL SHIFT, ALL TRIPS, 2012-2016



⁴ Changes between 2012 and 2016 that were statistically significant are underlined. Note however that statistical significance information is unavailable for National Travel Survey data.

This decrease in car mode share occurred at the same time as an increase in employment. The proportion of the overall HTS sample who were employed increased significantly between 2012 and 2016 (+5.3pp, from 45.1% to 50.4%). The increase between 2012 and 2014 was slightly larger (+3.4pp) than the increase between 2014 and 2016 (+1.9pp)

Changes in mode share at a national level for 'all trips' was available from the National Travel Survey (NTS) 2016 (Table 3.1). Mode share information from the NTS is available both including and excluding Dublin. The 'excluding Dublin' data is most commonly used as the main comparator within this report because the remaining sample is a more appropriate

comparator to the STAs given the higher take-up of smarter travel modes in the capital.

The NTS (excl. Dublin) shows that the reduction in private car use nationally was -0.8pp between 2012 and 2016, significantly less than the -4pp change observed across the STA areas. The net change within the STA programme, taking account of the observed national change, was therefore -3.2pp. The significant increase in walking mode share (+4.4pp) observed across the STA programme was notably higher than the national trend recorded in the NTS (+0.2pp). The change in cycling mode share was also higher among the STAs (+0.8pp) than the NTS sample (+0.1pp). The net change in walking mode share was therefore +4.2pp and cycling was +0.7pp,

using NTS excluding Dublin as the national comparator.⁵

A demographic analysis of the HTS results (2012 to 2016) revealed more about the influence of gender, age and socio-economic group on respondent's travel patterns. Analysis of the results showed gender specific differences in modal shift, with a greater increase in walking among men (+6.4pp) than women (+2.7pp) (Table 3.2). Also, there was a statistically significant increase in cycling among men (+1.5pp) which did not occur among women (+0.3pp). Private car use reduced for both genders, with a larger decrease for male respondents due to the greater uptake of walking and cycling.

⁵ Dublin has been excluded from the sample to ensure the comparator is more closely representative of the STAs.

TABLE 3.1: COMPARISON OF HTS SURVEY RESULTS WITH NTS

	STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	66.8%	-4.0	81.3%	-0.8	74.3%	-2.2
On Foot	24.8%	4.4	11.5%	0.2	14.6%	1.0
Bicycle	3.1%	0.8	0.7%	0.1	1.7%	0.5
Public Transport	2.9%	-0.1	2.0%	-0.4	5.5%	0.3
Lorry/Motorcycle/Other	1.6%	-0.9	4.0%	1.0	3.1%	0.4
Taxi	0.8%	-0.2	0.5%	-0.1	0.8%	0.0

TABLE 3.2: STA AREAS - PP CHANGE IN MODE (2012-2016) ACCORDING TO GENDER

	Male		Female	
	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	63.6%	-5.9	69.6%	-2.4
On Foot	25%	+6.4	24.7%	+2.7
Bicycle	5%	+1.5	1.5%	+0.3
Bus	2.2%	-0.2	3.1%	-0.1
Rail	0.1%	-0.1	0.3%	+0.1
Taxi/Hackney	1.2%	+0.1	0.5%	-0.5
Van / Lorry	2.7%	-1.7	0.3%	-
Motorcycle	0.2%	-0.2	0%	-0.1
Other	0.1%	-	0%	-0.1

Examining the HTS results according to age group highlighted that private car use reduced across all age groups with a corresponding increase in walking (Table 3.3). The greatest change was observed among the 18-24 age group among whom car use reduced by -9.2pp with a +7.2pp increase in walking and a +2pp increase in bus travel. There were no statistically significant results for the 50-59 age cohort which saw the least modal shift across 2012-2016.

HTS respondents were classified into standard socio-economic groups (outlined in Table 3.4)

based on the occupation of the chief income earner in the household. The analysis of mode share by socio-economic groups (Table 3.5) shows that private car use reduced and walking mode share increased across all groups with the greatest shift occurring for Group E (low income workers, unemployed and pensioners). There was a slight increase in cycling mode share for all groups, with the largest increase within Group C1 among whom cycling rose by +1.3pp. The results for bus and rail showed minor, inconsistent changes in mode share depending on socio-economic group while van/lorry use reduced slightly across all groups.

Information on the demographic composition of the HTS sample is provided in the HTS report in Appendix D.

Code	Chief income earner's occupation
AB	Higher and Intermediate managerial, administrative or professional
C1	Supervisory or clerical and junior managerial, administrative or professional
C2	Skilled manual workers
D	Semi-skilled and unskilled manual workers
E	Casual or lowest grade workers, pensioners, and others who depend on the welfare state for their income

TABLE 3.3: PROGRAMME LEVEL PP CHANGE IN MODE (2012 – 2016) ACCORDING TO AGE GROUP

All trips, STAs, change in mode share in percentage points, comparing 2012 with 2016							
	18–24	25–29	30–39	40–49	50–59	60–64	65+
Private Car	<u>-9.2</u>	<u>-7.4</u>	<u>-5.9</u>	<u>-2.4</u>	-0.5	<u>-5.1</u>	-0.7
On Foot	<u>7.2</u>	<u>6.3</u>	<u>5.5</u>	<u>3.8</u>	0.5	<u>6.9</u>	<u>4.1</u>
Bicycle	1.2	<u>2.2</u>	<u>1.4</u>	0.5	0.8	-0.4	0.2
Bus	<u>2.0</u>	<u>1.3</u>	<u>-0.7</u>	<u>-0.7</u>	-0.4	1.1	<u>-1.5</u>
Rail	<u>0.6</u>	0.1	0.1	-0.1	0.1	-0.2	<u>-0.4</u>
Taxi/Hackney	<u>-1.2</u>	0.2	-0.1	-0.1	-0.3	0.6	-0.3
Van / Lorry	<u>-0.6</u>	<u>-1.9</u>	-0.4	<u>-1.0</u>	0.0	<u>-2.1</u>	<u>-1.1</u>
Motorcycle	0.0	-0.7	0.1	0.2	-0.1	<u>-1.2</u>	0.0
Other	0.1	0.0	0.0	-0.1	0.0	0.2	-0.4
N (2016)	1558	1525	3065	2438	1860	743	1843

TABLE 3.5: PROGRAMME LEVEL PP CHANGE IN MODE (2012 – 2016) ACCORDING TO SOCIO-ECONOMIC GROUP

All trips, STAs, change in mode share in percentage points, comparing 2012 with 2016					
	AB	C1	C2	D	E
Private Car	<u>-3.4</u>	<u>-5.4</u>	<u>-4.1</u>	-0.4	<u>-12.1</u>
On Foot	<u>3.1</u>	<u>4.7</u>	<u>3.9</u>	0.5	<u>13.1</u>
Bicycle	0.6	<u>1.3</u>	<u>1.1</u>	<u>1.1</u>	0.5
Bus	0.7	-0.2	0.3	-0.7	-0.5
Rail	-0.3	<u>0.4</u>	-0.2	0.0	0.0
Taxi/Hackney	0.0	<u>-0.4</u>	-0.5	0.5	0.1
Van / Lorry	-0.7	-0.2	-0.7	<u>-0.7</u>	<u>-0.6</u>
Motorcycle	0.0	-0.1	0.2	-0.2	<u>-0.4</u>
Other	0.0	0.0	0.0	0.0	-0.2
N (2016)	2184	3841	2090	2474	2093

3.3 Employment trips

The change in mode share at a programme level for employment trips is presented in Figure 3.2. Private car trips to work changed by -4.3pp from 80.4% in 2012 to 76.1% in 2016. The largest proportion of this change occurred between 2012 and 2014 when car mode share was reported at 76.5%. Trips on foot from 2012 to 2016 increased +2.9pp from 12.0% to 14.9%. This is lower than the 2014 mode share for walking of 15.9%. Cycling mode share for trips to work increased marginally by +0.8pp from 2.2% in 2012 to 3.0% in 2016.

A direct comparison of mode share for commuting journeys only within the NTS is not possible as the journey purpose of 'work' in the survey includes both commuting and business travel. On this basis, the HTS results have been recategorised to include both commuting and business trips, as shown in Table 3.6. The NTS (excl. Dublin) data shows that the reduction in private car mode share nationally for 'work' trips was -0.2pp. This is substantially lower than the reduction in car mode share for commuting and business travel combined in the HTS of -1.7pp.

The combined increase in walking and cycling mode share observed across the STA programme for these trips (+4.4pp) also contrasts with the national control where a decrease of -0.4pp in combined walking and cycling mode share was observed.



⁶ Walking and cycling mode share have been combined in tables for specific trip types based on CSO advice that for some trip types, the NTS sample size was too small to yield statistically reliable figures for modes with small numbers of trips.

3.2: STA PROGRAMME LEVEL MODAL SHIFT, EMPLOYMENT TRIPS, 2012-2016

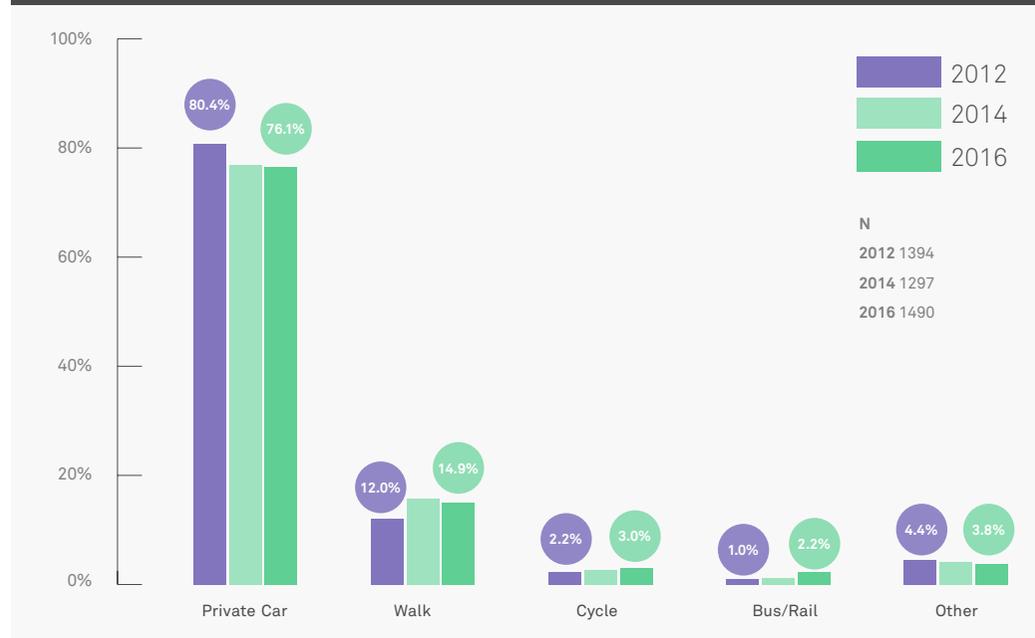


TABLE 3.6: WORK TRIPS (COMMUTING AND BUSINESS TRAVEL COMBINED) - COMPARISON OF HTS SURVEY RESULTS WITH NTS

	STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	75.5%	-1.7	81.5%	-0.2	73.1%	-1.5
Walk / Cycle ⁶	16.8%	<u>4.4</u>	6.6%	-0.4	11.8%	1.8
All Other	7.7%	<u>-2.7</u>	11.9%	0.6	15.1%	-0.4

3.4 Education trips

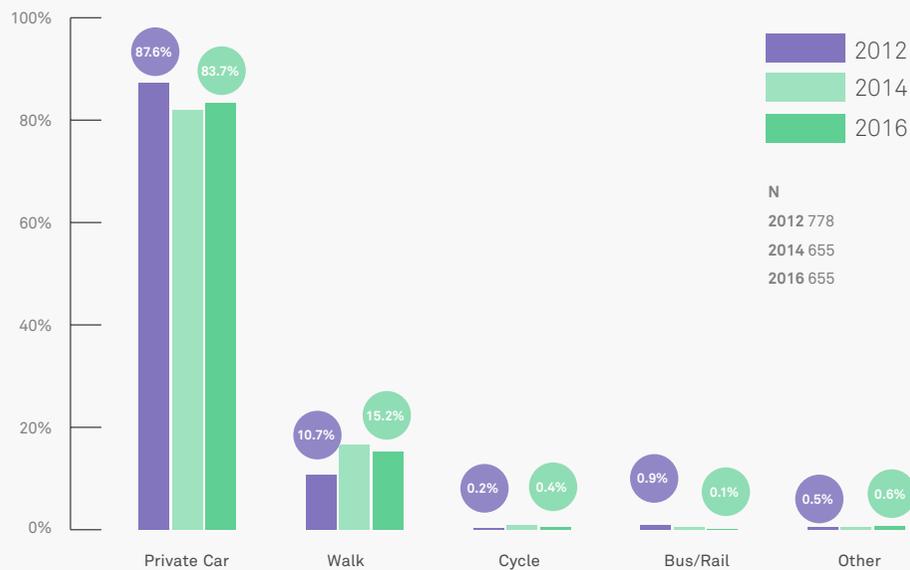
The change in travel mode for escorted and independent education trips are presented separately. Escorted education trips were identified in the HTS analysis using a combination of information and represent trips taken by persons over 18 years of age to escort another person to any level of education. The age of the person being escorted is not identified, but the majority of these trips are assumed to be school trips. Unfortunately, the available NTS data does not allow for a separation of escorting/

companion trips into specific trip purposes and therefore national data on 'escort to education' trips is not available for direct comparison with the HTS. The data presented herein is therefore gross change in mode share. Car mode share for escorted education trips decreased by -3.9pp from 87.6% in 2012 to 83.7% in 2016 (Figure 3.3). The largest decrease occurred between 2012 and 2014 when car mode share decreased to 81.9%.

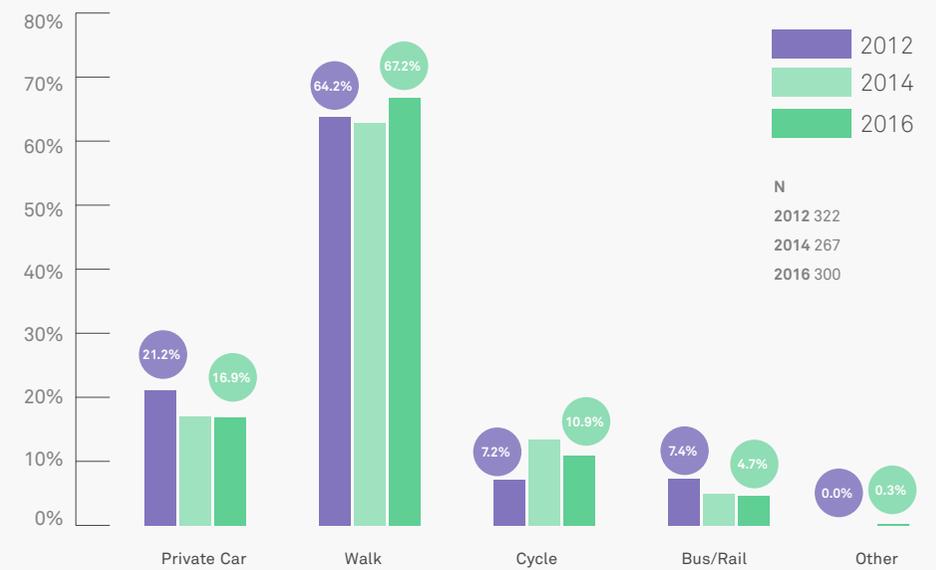
Given that there are no major third level institutions in either Dungarvan or Westport, the potential for modal shift for independent education trips is relatively small (the HTS only covered trips made by those over 18). This data therefore focuses only on Limerick (Figure 3.4). Car mode share for independent education trips changed by -4.3pp from 21.2% in 2012 to 16.9% in 2016. There was no change in car mode share from 2014 to 2016. Walking mode share increased by +3.0pp from 64.2% in 2012

to 67.2% in 2016. In the same period cycling mode share increased by +3.7pp from 7.2% to 10.9%. From 2014 to 2016 there was a decline to 10.9% in cycling mode share from the 15.2% reported in 2014.

3.3: STA PROGRAMME LEVEL MODAL SHIFT, ESCORTED EDUCATION TRIPS, 2012-2016



3.4: MODAL SHIFT IN LIMERICK, INDEPENDENT EDUCATION TRIPS, 2012-2016



The change in mode share for independent education trips in Limerick was compared against the NTS (incl. Dublin). As shown in Table 3.7, the decrease in car mode share for these trips in Limerick of -4.3pp was lower than the national control where a decrease of -11.9pp was observed. Similarly, the combined increase in walking and cycling mode share for these trips in Limerick (+6.7pp), was lower than the increase in the national control (+10.4pp). However, this would have been impacted by the fact that car mode share at the baseline in Limerick was

already far lower than the control and therefore the potential for modal shift was lower. Car mode share for independent education trips in Limerick in 2016 was far lower than the national control (16.9% vs 49.6%), while the combined walking and cycling mode share for these trips in Limerick in 2016 was more than double that of the control (78.1% vs 35.7%).



TABLE 3.7: INDEPENDENT EDUCATION TRIPS – COMPARISON OF HTS (LIMERICK) RESULTS WITH NTS

	Limerick		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	16.9%	-4.3	49.6%	-11.9
Walk / Cycle	78.1%	6.7	35.7%	10.4
All Other	5.0%	-2.4	14.7%	1.5



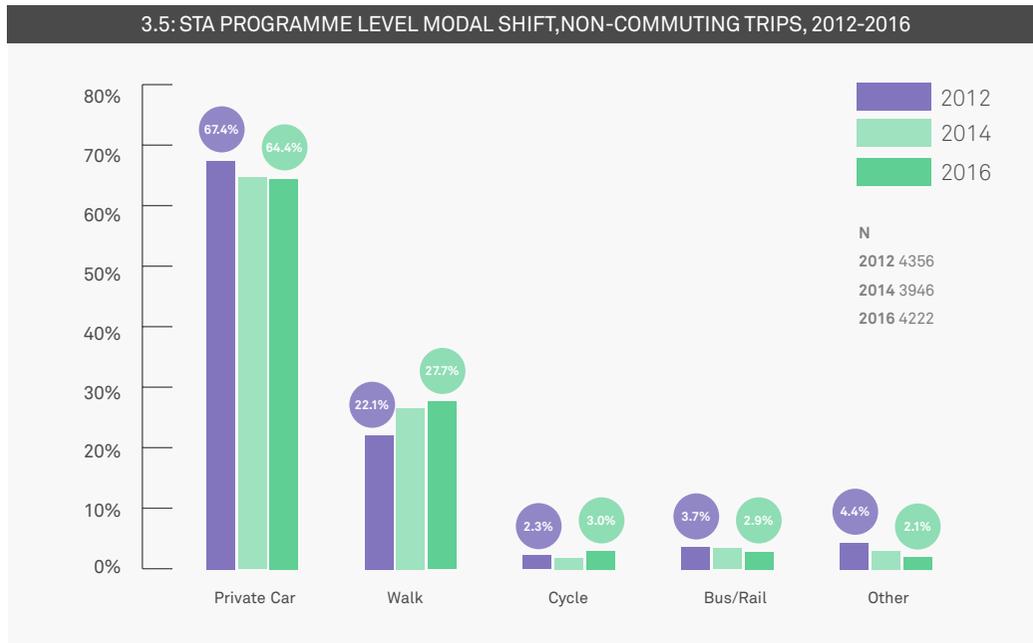
3.5 Non-Commuting Trips

In order to obtain a more holistic overview of the outcomes of the STA programme, this evaluation also considers the impact on “non-commuting” trips (Figure 3.5). In this context, non-commuting trips are defined as all trips excluding trips to work, education and escorting trips.

The mode share of non-commuting trips by car decreased by -3pp, from 67.4% in 2012 to 64.4% in 2016. Walking mode share in the same period increased by +5.5pp, from 22.1% to 27.7%. There was a minor increase in cycling mode share from 2.3% in 2012 to 3% in 2016.

The change in mode share for non-commuting trips was compared against the NTS.⁷ The NTS (excl. Dublin) data shows that there was a marginal increase in private car mode share nationally for non-commuting trips of 0.1 pp. In contrast, car mode share for non-commuting trips in the STAs reduced by -3pp. The combined increase in walking and cycling mode share observed across the STA programme for these trips (+6.2pp) also contrasts with the national control where an increase of +0.1 pp was observed.

⁷ Note that within the HTS data, business/other work related trips have been included as 'non-commuting' trips, but this trip type is excluded from the NTS non-commuting data, as the NTS does not separate commuting and other work trips. However, these trips make up only a small proportion of the total non-commuting trips in the HTS sample.



	STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	64.4	-3.1	79.7%	0.1	72.8%	-1.6
Walk / Cycle	30.7%	6.2	15.5%	0.1	19.7%	1.3
All Other	5%	-3.1	4.9%	-0.2	7.5%	0.3

3.6 Summary

A summary of the headline changes observed in the HTS and NTS between 2012 and 2016 is as follows:

- Taking account of the observed national change within the NTS (excl. Dublin), there was a net reduction of 3.2pp in car mode share for all trips at the STA programme level and a net 4.2pp increase in walking and net 0.7pp increase in cycling;
- A higher increase in cycling mode share for all trips was observed amongst men (+1.5pp gross change) than women (+0.3pp gross change);
- There was a noticeable shift in gross mode share for all trips from car (-9.2pp) to walking (+7.2pp) amongst 18-24 year olds. Lower, but still statistically significant, increases in walking mode share were observed for all age groups except the 50-59 age group;
- The largest change in car mode share (-12.1pp gross change) for all trips was observed amongst socio economic group E, who also recorded increases in mode share for walking (+13.1pp). There was little change in the mode share of cycling (+0.5pp gross change) or bus (-0.5pp gross change) amongst this group;
- For employment trips, there was a shift in mode share from car (-4.3pp gross change) to walking (+2.9pp gross change);
- Comparing the 2012 and 2016 NTS data (excl. Dublin), there was a net reduction in car mode share for the combined trip purposes of travel to work and business travel of -1.5pp at the STA programme level. The net increase in the combined mode share of walking and cycling for these trips at the STA programme level was 4.8pp; and
- For escorted education trips there was a shift in mode share from car (-3.9pp gross change) to walking (+4.5pp gross change). NTS data does not allow for a separation of escorting/companion trips into specific trip purposes and therefore no national data on 'escort to education' trips is available for comparison.



4



Dungarvan

Summary of Smarter Travel Delivery and Impacts in Dungarvan



Inputs and Outputs

- The Go Dungarvan Stage 2 Smarter Travel bid was valued at €13.20m, however, the DTTAS funding of €7.20m was awarded after elements of the bid including proposed public transport services were removed from the plan.⁸ An additional €734,204 was also provided by DTTAS in 2011 as part of the 'Jobs Initiative' funding stream in advance of the formal award of STA funding. Additional funding of almost €2.5m from Waterford City and County Council and TII was invested on redevelopment of Grattan Square and cycling projects.
- €5.81m, over three quarters, of the DTTAS STA funding was invested on infrastructure and the remaining €1.39m on behavioural change projects, including over €1m on staff and operational costs.
- A large section of 'The Track' greenway was delivered before the announcement of Smarter Travel funding award. Further investment focused on extending the facility and delivery of almost 10km of additional cycling and shared infrastructure.
- The scale of the €3.30m redevelopment of Grattan Square was not reflected in the original Smarter Travel bid but consumed 21% of the overall DTTAS STA funding, in addition to a substantial contribution from WCCC.
- School travel planning was a key focus of behavioural change measures delivered with all primary and secondary schools in the town involved in the programme.
- A number of innovative projects were piloted including: investment in an E-Working Centre, an e-Book Pilot in a local secondary school, a Smarter Travel Centre and research on roundabout safety.

⁸ In addition, the value of all bids were cut by 20% due to reduced overall pot of funding available for the programme.

Management of Delivery

- A team of four full time staff were appointed to the delivery of Go Dungarvan. The team was supported on a part-time basis by staff from An Taisce and the Waterford Sports Partnership.
- The Go Dungarvan delivery team established strong relationships across the community to promote Smarter Travel. However, there was limited commitment to retaining the delivery team as by early 2015 there was very limited remaining resources allocated to the project.
- No provision was made for the legacy of Go Dungarvan within the local authority which has impacted perceptions of the programme in the community.

Delivery Against Plan

- There was significant divergence from planned spend without reassessment of programme objectives or targets.
- A number of proposed junction upgrades and radial routes for cyclists were not delivered and these still act as a barrier to walking and cycling.
- Less than two thirds of the planned behavioural change funding was invested largely because there was a perception, at a local authority level, that infrastructure would deliver stronger outcomes.

Programme Outcomes

- Targets set for the Go Dungarvan programme were too ambitious and therefore cannot be used as a reasonable basis to measure progress.
- The HTS shows positive impacts on modal shift, mainly for escorted trips to school (car decreased by 10pp, walking increase of 9.9pp) and non-commuting trips (car decreased by 6.4pp, walking increase of 6pp and cycling increase of 0.7pp).
- Social Group 'E' was most open to modal shift demonstrating a -18.9pp reduction in all car trips with a 16.3pp increase in walking trips and 3.8pp increase in cycling.
- Modal shift in Dungarvan is higher than that experienced in the national and regional controls.
- Most of the modal shift in Dungarvan occurred from 2014 – 2016, five years after 'The Track' was first completed, indicating that a longer period after infrastructure investment may be required to influence travel patterns.

Impact Attribution

- Relatively high unemployment and a relatively high proportion of HTS respondents within the lowest social group 'E' has impacted modal shift in Dungarvan. Group 'E' respondents demonstrated the highest decrease in car mode share (-18.9pp) and highest increase in walking (+16.3pp). A small proportion of respondents changed travel patterns to save money or had no option as a result of no longer having access to a car.
- There is evidence that both infrastructure and behavioural change measures have impacted modal shift, despite limited investment in the latter.
- Improvements in infrastructure have improved perceptions of safety, trip comfort and the image of Smarter Travel contributing to modal shift.
- Initiatives in schools (such as cycle training and social cycles) have improved the image of Smarter Travel and encouraged modal shift for trips to school as well as increased walking and cycling for leisure.



4.1 Overview

Dungarvan, County Waterford, has a population of 9,227.⁹ It is a compact town with a well-defined urban boundary that stretches approximately 6km from east to west and 3km north to south. Relatively short travel distances, combined with the fact that the town has almost flat gradients throughout, makes the town suitable for walking and cycling.

The town has a number of major employers including Waterford City and County Council, Glaxo Smith Kline (GSK), Microchem Lancaster Laboratories, Microbrush, Glanbia and Dungarvan Hospital. However, the majority of employers in Dungarvan are small and medium size businesses. There are five primary and four secondary schools in the town and the nearest third level institution is the Institute of Technology in Waterford City.

The overarching aim set out for the Dungarvan Smarter Travel programme, known as Go Dungarvan, was to:

“Encourage active living and improve well-being of residents of Dungarvan through increased cycling, walking and use of shared transport by community engagement, consultation, information, promotion, education, infrastructure and environment.”

Specific objectives identified to achieve this vision included:

- Achieve a shift in travel modes from the private car to walking, cycling, public transport and car sharing;
- Improve the health and well-being of residents of Dungarvan;
- Reduce the level of collisions on the road through road design and road safety training;
- Improve the air quality of Dungarvan;
- Act as a pilot town for smarter travel that can be replicated in similar towns throughout Ireland;
- Act as an international model of good practice in smarter travel by delivering an ambitious programme of infrastructural improvements integrated with a behavioural change campaign;
- Enhance the economic impact through the development of a 'green economy' by actively reducing greenhouse gas emissions by residents and employers of Dungarvan;
- Introduce internationally renowned innovation to Smarter Travel using Information Communications Technology (ICT); and
- Implement Smarter Travel efficiently and effectively deliver value for money on investment.



The following sections present details of the financial inputs, outputs delivered and outcomes achieved. The contribution of the various infrastructure and behaviour change measures to the observed change in mode share is also presented.

⁹ Population is for Census 2016 - Settlement of Dungarvan

4.2 Programme Inputs

The Stage 2 Smarter Travel bid proposed by the Go Dungarvan team was valued at €13.20m. In addition to required cuts due to the reduced level of available funding, funding requested for the operation of a town bus service and a shared transport tool¹⁰ were removed from the final award resulting in a total allocation of €7.20m from the DTTAS.

In addition to the DTTAS funding, part of the programme agreement permitted other funding sources to be used to support and supplement the STA programme. This additional investment was classified as being part of the STA programme, and thereby within the scope of this evaluation; much of the investment was to part fund specific interventions and all monies were expended leading into or during the period of the programme. The additional sources of funding were as follows:

- €734,204 was provided by the DTTAS in 2011 as part of the 'Jobs Initiative' funding. This money was provided in advance of the formal award of STA funding to Dungarvan to enable a number of 'Go Dungarvan' projects to proceed in advance of the release of the main STA programme funds. In particular, this included funding of 'The Track' greenway, Youghal Road and Duckspool Road cycle facilities;

- €256,000 was invested by the National Roads Authority (NRA) to support delivery of cycle lanes on the Coolagh Road (N25/ The Burgery);
- €417,896 was invested by Waterford City and County Council (WCCC) to support traffic calming and improve pedestrian and cyclist facilities on Ballinroad Link, Monang Road and Youghal Road; and
- €1,794,792 was invested in the Grattan Square/Town Centre project by WCCC, part of which related to a cost overrun during the construction phase in comparison to initial estimates.

In total, €3,20m was invested from sources other than the DTTAS, making a combined investment in Dungarvan as part of the STA programme of €10.40m.

It should be noted that the DTTAS invested an additional €2m, alongside approximately €12m from WCCC, on the development of the Waterford Greenway between 2013 and 2017. This scheme was developed in a number of phases and extends from Dungarvan to Waterford City. Whilst the official opening of the full route did not take place until March 2017, almost half of the route (23km from Dungarvan to Kilmacthomas) was open by September 2016 with some sections accessible to the public

before this. The Waterford Greenway is the continuation of 'The Track' within Dungarvan, and has been treated as a non-STA programme scheme. However, it is difficult to separate the wider impact of the Waterford Greenway in Dungarvan, especially in relation to movement counts and general qualitative observations of cycling in the town.

¹⁰ The shared transport tool proposal in the Dungarvan bid focused on particular shared transport 'corridors' between the main towns in the area. Participating private car drivers could receive an automated micro-payment of 20c per km from each passenger carried on these routes.



4.2.1 Management of Delivery

Go Dungarvan was delivered by a team of four staff from 2012 to 2015 as well as part time input from Waterford Sports Partnership and An Taisce staff. The structure of the team was broadly similar to that proposed in the bid, with responsibilities split across project management, engineering and behavioural change.

The delivery team has left a lasting legacy through the relationships developed during this period and their commitment to the promotion of Smarter Travel was commended on several occasions through discussion with stakeholders during the evaluation. Towards the end of the funding allocation for Smarter Travel in Dungarvan, staff resources were either transferred to other departments within the local authority or contracts were ended, leaving no continuity or legacy for the programme within the local authority.

Legacy was not a specific criterion for the evaluation of Smarter Travel bids and therefore the bids and subsequent communication did not identify a clear 'exit strategy' for completion of the project. Despite this, the opening of the Waterford Greenway is perceived to have extended the impact and legacy of Go Dungarvan with some participants in focus groups linking the two projects. Dissolving the team three years into what was proposed as a five year programme has given the community an impression that Go Dungarvan was just a passing 'phase' and no longer a local priority.

Programme delivery in Dungarvan was also impacted by amalgamation of the town and county councils in 2014. Elected town council members who had given commitment to delivery of the Smarter Travel bid were no longer able to support various proposals of the plan during implementation and the programme often failed to gain the support of municipal councillors.



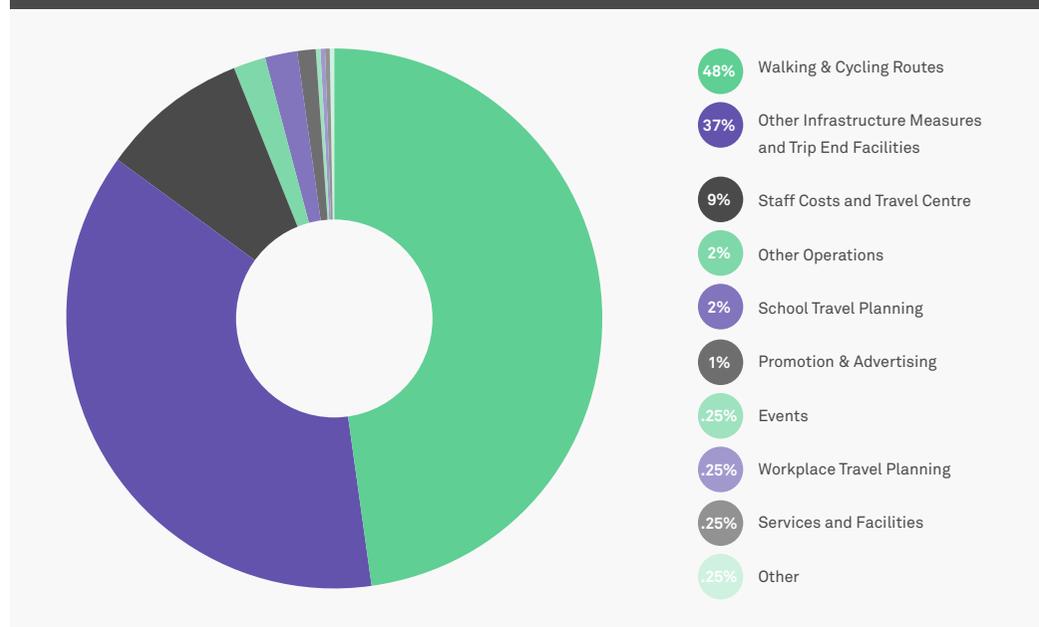
4.3 Programme Outputs

Following the award of funding, the revised scope of Go Dungarvan proposed a split of investment of 65% for infrastructure and 35% for behavioural change measures. However, the actual split of outturn costs was 87% (€9.01m) infrastructure and 13% (€1.39m) behavioural change.¹¹ When staff and operational costs are excluded, the proportion of spend on behavioural change measures reduces to less than 5%. The allocation of investment evolved throughout delivery, with the proportion of spend on behavioural change reducing as the

programme was implemented. Discussions with the project team identified that there was no review undertaken during implementation to ensure that investment remained aligned with the original programme objectives and targets.

A breakdown of the funding invested in Go Dungarvan is shown in Figure 4.1. This breakdown includes both DTTAS and additional funding, such as that received from WCCC and the NRA. The following sections provide a more detailed overview of the investment.

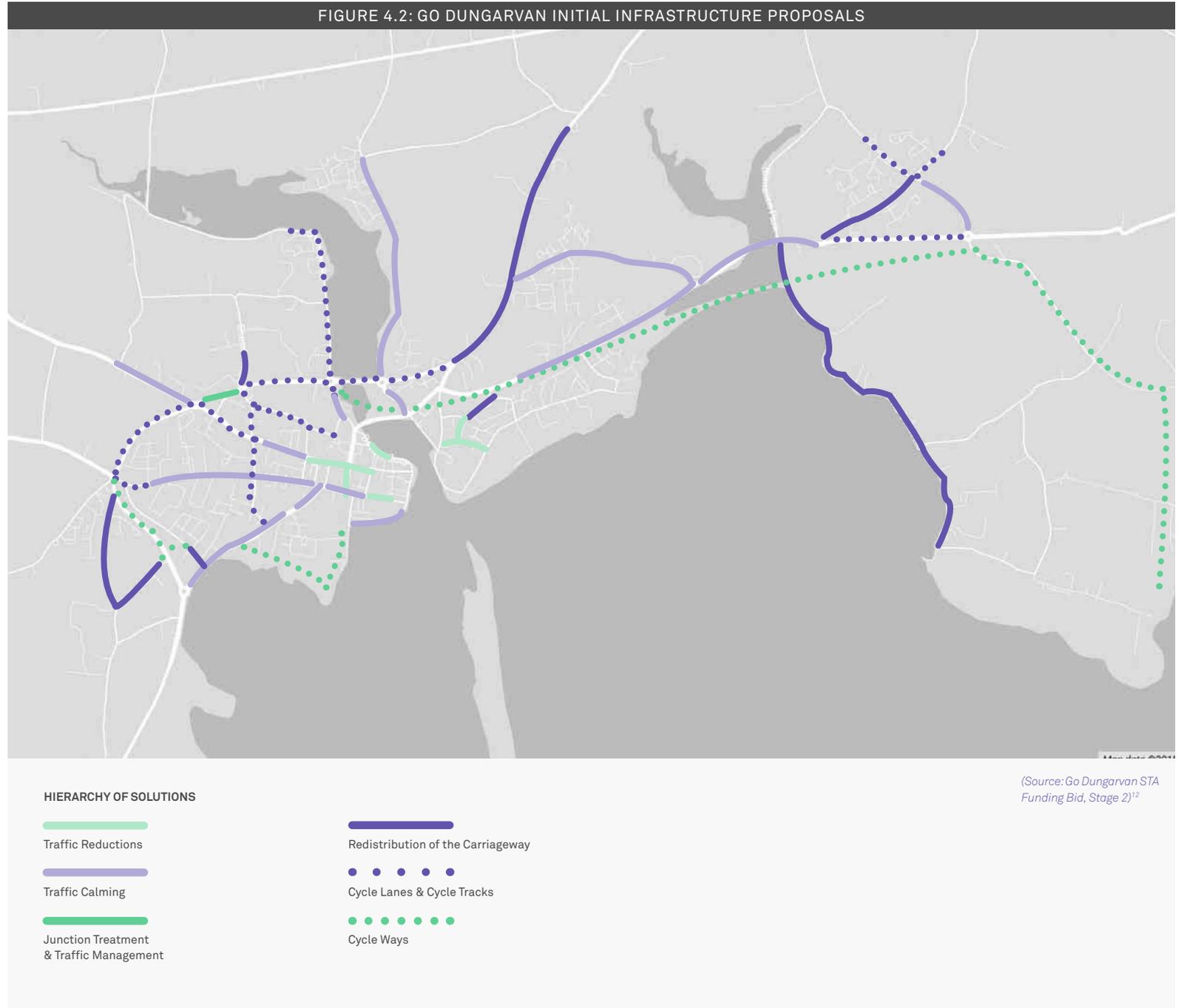
FIGURE 4.1: GO DUNGARVAN – SUMMARY OF PROJECT SPEND FROM INCEPTION TO Q2 2017



4.3.1 Infrastructure Measures

Dungarvan's bid for STA funding proposed a suite of complementary infrastructure proposals shown in Figure 4.2. The proposed improvements covered all of the main streets and roads in and around the Dungarvan urban area, including links to the village of Ballinroad on the outskirts of Dungarvan. The bid referenced the 'Hierarchy of Solutions' in the National Cycle Policy Framework and proposed the delivery of an integrated cycle network based on the guidelines provided in the framework. This included: traffic calming, junction treatments and traffic management, redistribution of carriageway and the introduction of cycle lanes and cycle tracks across the town.

FIGURE 4.2: GO DUNGARVAN INITIAL INFRASTRUCTURE PROPOSALS



¹¹ These amounts include additional infrastructure funding from the 2011 DTTAS 'Jobs Initiative' scheme and from other sources as detailed previously. If only DTTAS STA funding is considered, the proportion of spend on behaviour change measures was 19%, or 6% when staff and 'other operations' spending is excluded.

¹² Map 4.9 in Go Dungarvan Stage 2 Submission to the DTTAS (April 2010)

TABLE 4.1: GO DUNGARVAN INFRASTRUCTURE MEASURES

Project	Description	Quantity	Cost
PU4 Grattan Square	Redesign of Grattan Square utilising a shared space concept.	1	€3,300,000 [incl. €1,794,792 from WCCC]
The Track	Greenway	3.9km	€38,653 [Plus €551,955 under Jobs Initiative 2011]
Ballinroad Link	Cycle (off-road), pedestrian and traffic calming provisions (incl. new pedestrian walkway on Barnawee Bridge)	1.7km	€895,196 [incl. €160,000 from WCCC]
Duckspool	On road cycle lanes, off-road cycle lane (beside footpath)	850m	€37,738 [Plus €56,518 under Jobs Initiative 2011]
Murphy Place	Traffic Calming/Home Zone New footpaths, school drop-off zones and 4 pedestrian crossings	4	€275,813
N25 Ring Road	Shared pedestrian and cycle facility and new crossings at key junctions	2.6km	€483,041
Fr Twomeys Road	Shared cycle and pedestrian facility	0.75km	€221,796
Youghal Road	Cycleways (on-road and off-road), traffic calming, pedestrian provision	1.1km	€917,607 [Plus €125,731 under Jobs Initiative 2011] ¹⁵
Coolagh Road	Cycle lanes (on-road) and pedestrian crossing	1.9km	€759,711 [incl. €256,180 from NRA]
Monang Road	Traffic calming, footpaths and lighting	1.5km	€559,859 [incl. €157,896 from WCCC]
Cappoquin Road	Footpath, cycle path and traffic calming measures	850m	€141,632
Gold Coast Road	Cycle, pedestrian and traffic calming provisions	250m	€117,493
Emmet Street	Footpath widening and 2 new crossing points	2	€52,846
Davitts Quay	Cycle parking and traffic calming		€43,587
Other spending on links	Other spending on links (majority not delivered)		€16,629
E-Working Centre	Remote working space at Dungarvan Enterprise Centre		€83,374
'Go School' Facilities	School cycle parking		€44,011
Electric Vehicles	Purchase of two electric vehicles for use by the local authority		€70,739
CCTV	Preparatory works and supporting infrastructure only, delivery incomplete		€27,927
Smarter Travel Centre	Showering/changing facility with bicycle parking and meeting space for public engagement work by Go Dungarvan team		€120,000
WIT TSSG Roundabout Research	Research to develop a wireless sensor system to detect cyclists at roundabouts		€ 70,249
TOTAL (incl. Jobs Initiative 2011 funding)			€9,012,105

A significant amount of new infrastructure was delivered as part of the STA programme, including new and upgraded cycling and pedestrian facilities, traffic calming, public realm improvements and new 'trip end' facilities. Further detail on individual projects and their associated costs is provided in Table 4.1.

The largest project in terms of cost was the redevelopment of Grattan Square within the town centre. The Square has been redesigned following a shared space concept. In addition to improving the visual appearance of the space, the scheme has also delivered improved pedestrian access to adjacent streets, reduced clutter and created additional public space.

One of the most high profile infrastructure projects in Dungarvan was the redevelopment of the 'The Track' (a route along a disused railway line which had previously been poorly set out) to form a 4km high quality greenway.¹³ This scheme was included in the original Go Dungarvan bid and was opened under the 'Go Dungarvan' brand. However, due to delays in the STA funding announcement the scheme commenced using alternative DTTAS funding.¹⁴

¹³ The term 'Greenway' is used throughout this report to denote routes developed for pedestrians and cyclists which are off-road and have few junctions. This term is most commonly used by the STA teams and local authorities. The NTA Cycle Manual refers to these routes as Cycleways.

¹⁴ Jobs Initiative Funding

¹⁵ Includes €100,000 WCCC contribution

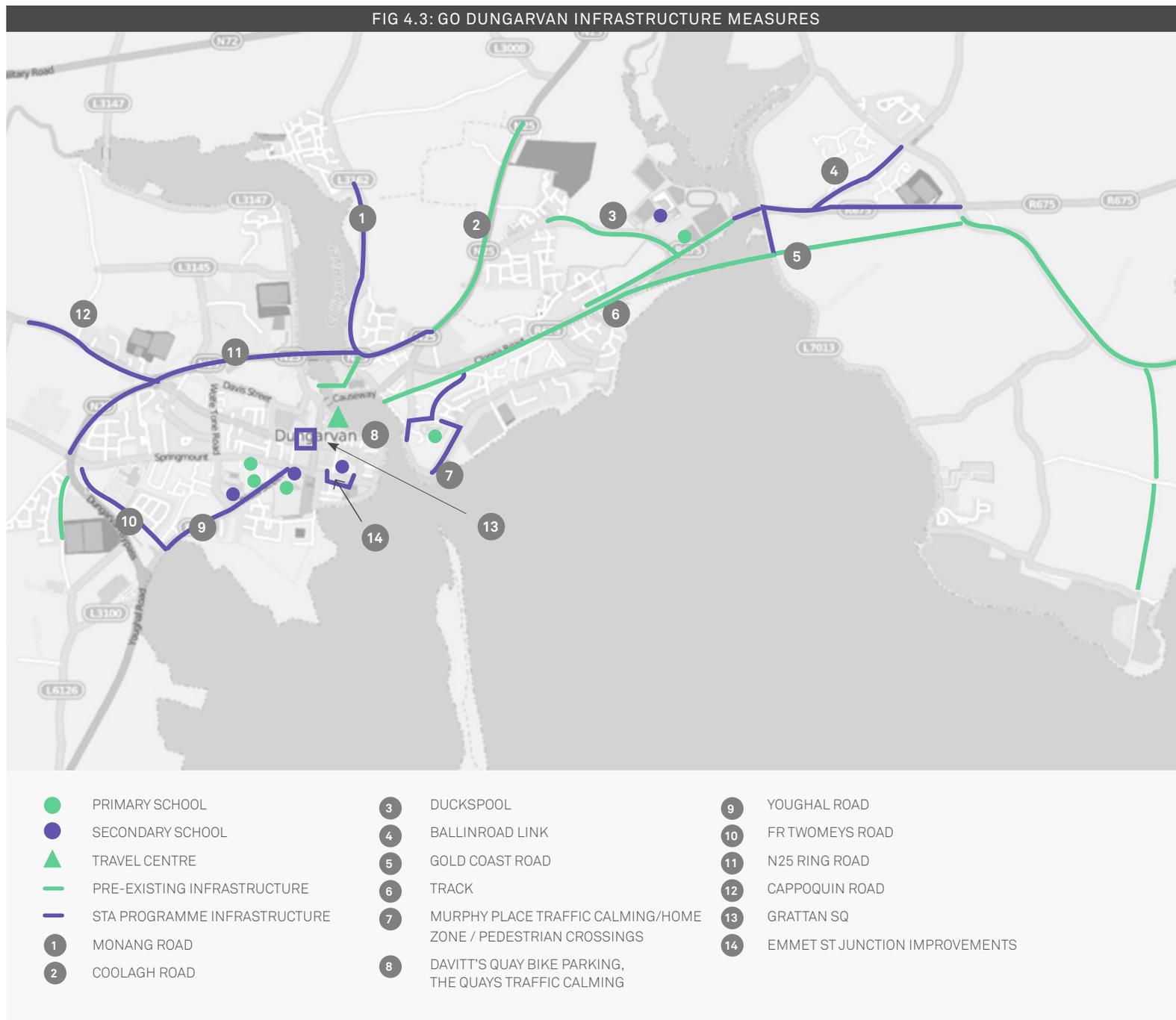
This greenway links the edge of the town centre with residential areas to the east of Dungarvan and also forms the first part of the inter-urban Waterford Greenway. Completion of The Track provided the impetus for an investigation into extending the greenways to Waterford along an old railway corridor.

This 46km scheme, which officially opened in March 2017, is anticipated to act as a catalyst for tourism and economic growth in the region.

A number of other Go Dungarvan projects have improved connectivity between The Track and key destinations in the town. The Ballinroad Link particularly the improved provision for pedestrians at Barnawee Bridge, has improved connectivity from 'The Track' to the village of Ballinroad. Cycle facilities on the Duckspool Road connect two schools to The Track, while the Murphy Place Home Zone project has improved the link between The Track and Scoil Mhuire primary school in Abbeyside.

Around the perimeter of the town, a greenway has been provided at Fr Twomey's Road on the west of the town and along the N25. Together with new and upgraded crossings on the N25, these facilities form an orbital route around the town. Outside of this orbital route, a number of schemes were delivered on approach roads to the north of the town. On the Youghal Road to the south west of the town centre, off-road cycle paths, upgraded crossings and significant landscaping measures have been delivered.

FIG 4.3: GO DUNGARVAN INFRASTRUCTURE MEASURES



Supporting infrastructure measures delivered in Dungarvan have included: the provision of cycle parking at schools and in the town centre; new electric vehicle charging points; contribution towards an E-Working Centre at the Dungarvan Enterprise Centre; and the Go Dungarvan Travel Centre.

The scope of delivered schemes in Dungarvan diverged from the original bid in a number of areas. One of the key differences was the investment of €3.30m made to redevelop Grattan Square, which represented 32% of the overall funding invested in STA projects between 2011 and 2016. The scale of the scheme as ultimately delivered was not reflected in the revised Go Dungarvan investment programme which was agreed in 2012, which included a budget of €547,310 for Grattan Square, while the scale of the planned works in the original Go Dungarvan bid was lower still, at just €62,755. Spend on this scheme, and diversion from the original plan, had repercussions for the remaining planned infrastructure with a number of the proposed radial cycling routes shown in Figure 4.2 not being delivered. This has resulted in 'gaps' in the cycling network delivered.

The Go Dungarvan team experienced a lack of support in tackling some of the biggest barriers to Smarter Travel. Busy roundabouts, perceived as unsafe by pedestrians and cyclists, were not upgraded and the planned redistribution of carriageway space (from car to bicycle) was not implemented. Plans to reduce car parking in the town centre by 170 spaces to make way for improved pedestrian and cyclist amenity, also met with resistance from the local business

community, resulting in the final reduction by approximately 15 spaces.

A number of other traffic management changes proposed in the bid were not implemented, including:

- Funding was allocated to the TSSG research group at Waterford Institute of Technology (WIT) to progress a wireless sensor system which was proposed in the bid to reduce danger to cyclists at roundabouts. However, although some progress was made on the development of the system, including trials which took place on the WIT campus, the system was not trialled or implemented in Dungarvan.
- A proposed Heavy Goods Vehicle review was intended to be undertaken to develop a plan for moving HGV's into and out of the Town Centre in a more controlled manner, but this review did not take place and therefore no changes were implemented. Similarly, the proposed review of traffic signal cycle times at all signalised junctions was not completed (although some signals were removed as part of the town centre works).

'Home Zones' (traffic calmed residential streets) were intended to act as the key links from residential areas to the walking and cycling network. Following delivery of an initial pilot, the approach for development of a more comprehensive Home Zone plan for residential areas in Dungarvan was to be prepared. However, just one Home Zone was delivered at Murphy Place. A further link to the greenway from a

residential area opened but was subsequently closed due to negative feedback from residents regarding antisocial behaviour.



TABLE 4.2: GO DUNGARVAN BEHAVIOURAL CHANGE MEASURES

Category	Cost (to end 2016)
Staff Costs and Operations	€1,037,551
School Engagement	€161,412
Promotion and Advertising	€67,648
Dungarvan Local Guide	€10,816
Events and Competitions	€59,545
'Champions' Initiative	€24,684
Subsidised Safety Equipment	€17,717
Workplace Engagement	€5,674
GP Referral Scheme	€3,564
Community Protection Training	€1,304
Adult Cycle Training	€658
Bike Hire Scheme	€394
Total	€1,390,967

4.3.2 Behavioural Change Measures

To complement infrastructure improvements and encourage modal shift, a behavioural change programme was developed. Measures included in the Go Dungarvan bid included: a promotional campaign encompassing media, events, tele-marketing and travel advice; a bike hire scheme; workplace and school travel planning; and support for people with mobility challenges.

A summary of the behavioural change measures delivered through the STA programme is provided in Table 4.2 and further detail is provided below and in Section 4.4.4 (Behavioural Change Investment Outcomes). The majority (75%) of the behavioural change budget was actually expended on staff and other operational costs. Some of the staff time associated with this spending was invested in the delivery of behavioural change measures but it also included resources associated with management and infrastructure delivery.

The Go Dungarvan team worked in partnership with a part time An Taisce School Travel Officer and with Waterford Sports Partnership (WSP) on delivering the programme. The An Taisce position was part funded through the STA programme and WSP staff provided additional support to schools in implementing specific initiatives. All primary (five) and secondary (four) schools in Dungarvan were engaged in the Go Dungarvan Schools Programme which encompassed a wide range of activities, including cycle training and road safety training, town wide/multi-school events and competitions, an e-book pilot project, workshops on various topics and the collection of school travel survey data.

The 'promotion and advertising' funding category included costs on a range of different media types which were used to promote Smarter Travel, including a website, radio advertising, a newsletter delivered quarterly to households and the Go Dungarvan Facebook page. Separately, a 'Dungarvan Local Guide' which included a map of the cycle network was developed.

Existing non-STA programme events and competitions were also used to raise the profile of Smarter Travel and the Go Dungarvan brand. The team focused mainly on collaborating with existing annual events, such as the St. Patrick's Day Parade, the 'Sean Kelly Tour of Waterford' leisure cycling event, the Waterford Festival of Food, 'Dungarvan Aglow' (turning on of Christmas lights) and the John Treacy 10km run. A varied programme of events was also organised during National Bike Week each year and in some years, National Childminding Week also provided a focus for initiatives targeted at pre-school age groups.

To help demonstrate the potential for people to walk and cycle more for different trip types, Go Dungarvan 'Champions' were provided with support to encourage the use of smarter travel modes amongst their members or within their business and their stories were publicised. For example, Dungarvan Paints and D.I.Y. purchased a cargo bike to assist with local deliveries and a local Red Cross branch was provided with bicycles to assist their work at local events.

4.3.3 Summary

A General Practitioner (GP) Exercise Referral Scheme was jointly funded by the Health Service Executive (who run the scheme nationally) and Go Dungarvan. The scheme allows patients to be referred by GPs to participate in a structured programme at a participating leisure centre. Participants in Dungarvan were given a step counter and information about Go Dungarvan on signing up for the programme.

As outlined in Section 4.3, the level of investment on behavioural change measures reduced from the original plan, and there were significant changes from the planned programme of interventions. Some of the key elements of the programme that were not delivered included: workplace travel planning; a bike hire scheme; and a telemarketing campaign. There was take-up from local businesses in workplace travel planning and the Go Dungarvan team had limited specific training or experience in the area of behavioural change/travel planning. As such, no specific measures targeting workplaces were fully delivered in Dungarvan.

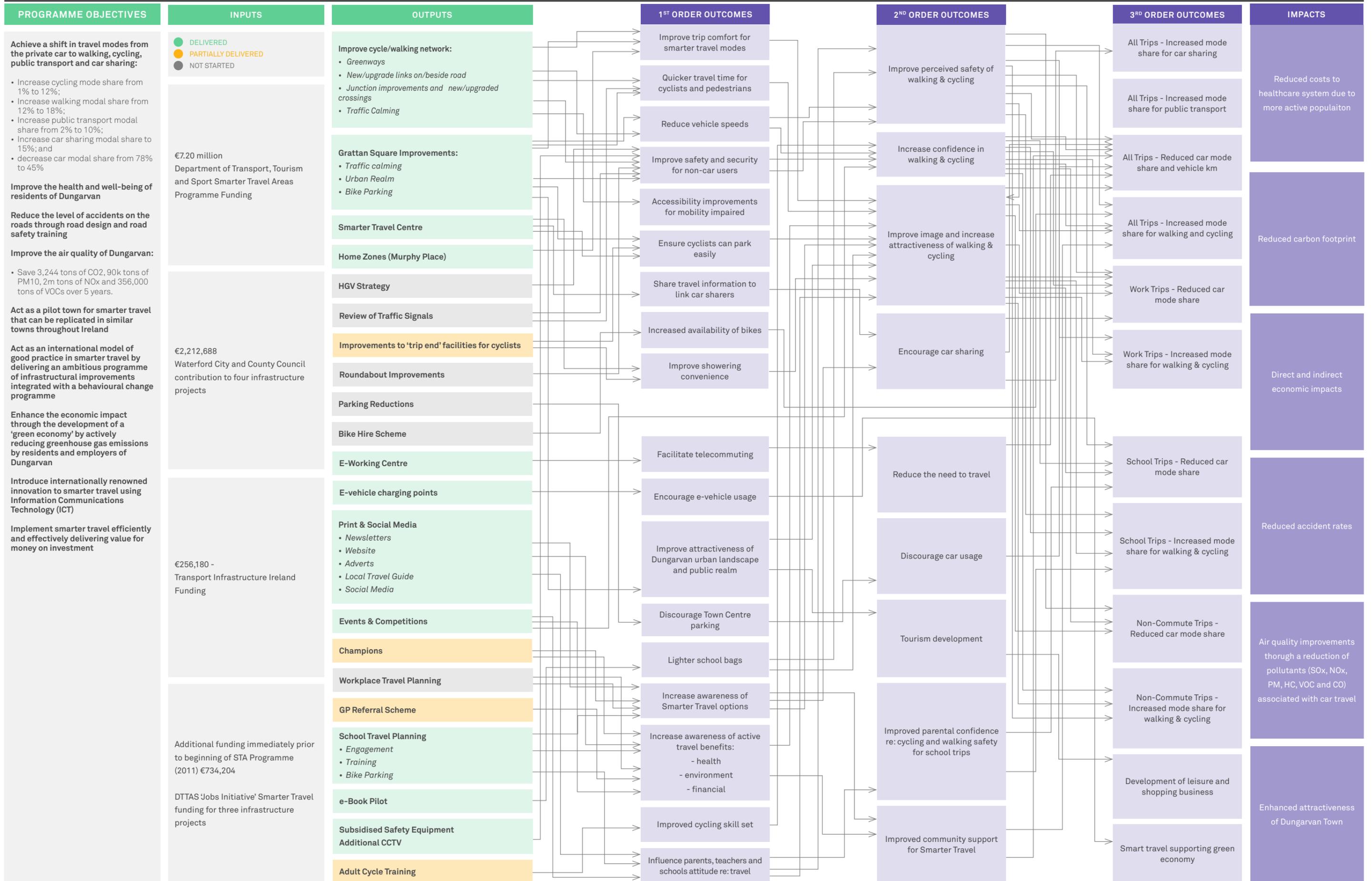
Similar to other STAs, it was perceived within the local authority that funding was better targeted towards the delivery of infrastructure as a more 'tangible' outcome of investment rather than behavioural change measures, which were perceived not to result in immediate outputs or outcomes. As such, there was a low level of support and appreciation for the delivery of behavioural change measures.

The investment programme in infrastructure and behavioural change measures in Dungarvan was modified following STA funding award, during the design and initiation phase. The outcomes and impacts of Smarter Travel investment in Dungarvan can therefore only be measured against schemes and initiatives that were actually delivered, which are summarised in the Logic Map in Figure 4.4.

The Logic Map is used throughout the evaluation to establish the causal links or pathways between interventions and anticipated or targeted outcomes. The Logic Map links programme outputs to the anticipated short/medium term outcomes which were identified during a focus group with the Go Dungarvan delivery team. The Map also includes the overall anticipated longer term impacts of investment which align with the programme objectives.



FIG 4.4: LOGIC MAP SUMMARY OF THE ANTICIPATED IMPACT OF THE SCHEMES DELIVERED THROUGH GO DUNGARVAN



4.4 Programme Outcomes

This section provides a detailed analysis of the impact of Smarter Travel investment on travel patterns and attitudes in Dungarvan. Modal shift is the primary objective of Smarter Travel and therefore, results of the Household Travel Survey (HTS) provide the primary source of evidence. Modal shift identified through the HTS is referred to as the 'gross change', without changes in national controls taken into account. The National Travel Survey (NTS) provides a valuable control sample while the Census results of 2011 and 2016 have also been used as a secondary source of evidence. The 'net' level of modal shift in Dungarvan has been determined by calculating the difference between changes within the HTS and NTS control.

The mode share outcomes for different trip types are presented herein. This is followed by a summary of the main changes observed in STA resident attitudes, as recorded in the HTS. The remaining sections of this chapter provide a detailed assessment of the contribution of the various infrastructure schemes and behaviour change initiatives on observed modal shift and attitudes.

4.4.1 Modal Shift

The observed change in modal split is presented for the following main trip purposes:

- All trips;
- Employment trips;
- Education trips; and
- Non-commuting trips.

All Trips

The change in mode share between 2012 and 2016 in Dungarvan for all trips, as reported in the HTS, is presented in Figure 4.5. Car mode share changed by -7.4pp, from 79.4% in 2012 to 72% in 2016; most of this change occurred between 2014 and 2016. The mode share for walking increased by +5.6pp from 14.7% in 2012 to 20.3% in 2016, with all of this change recorded between 2014 and 2016. Cycling mode share increased by +0.9pp from 2.7% in 2012 to 3.6% in 2016.

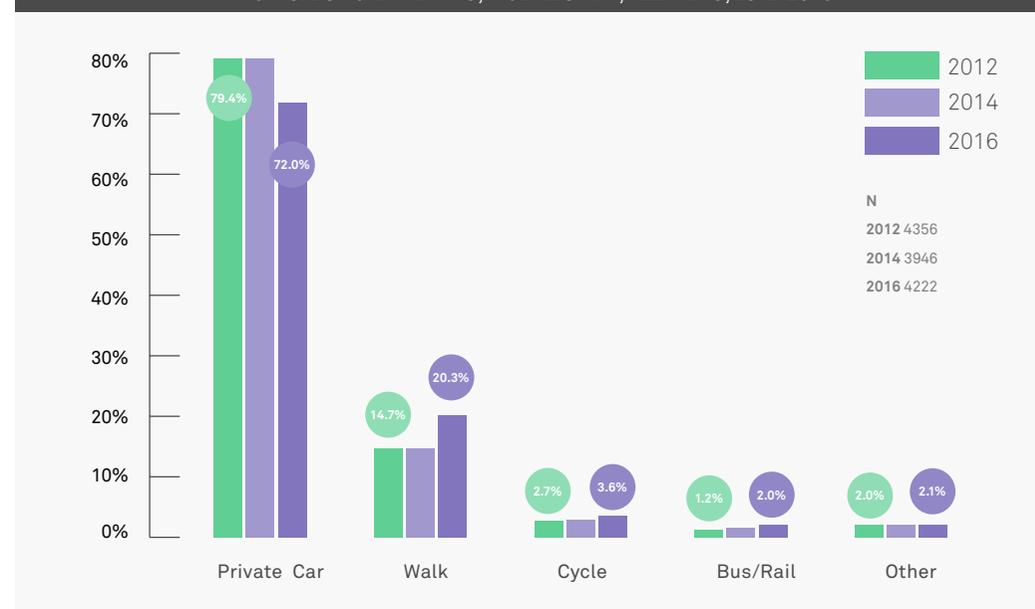
The HTS results demonstrate that a high proportion of the modal shift experienced in Dungarvan occurred from 2014 to 2016, almost five years after some of the key infrastructure, such as 'The Track', was first delivered. This pattern of change may indicate that the

timeframe for influencing travel patterns may be longer than the timeframe of the current evaluation.

Results of the NTS (excluding Dublin) show a change between 2012 and 2016 in car mode share of -0.8pp, far less than the -7.4pp change observed in the Dungarvan HTS (Table 4.3). The net change in Dungarvan, taking account of the observed national change, was therefore -6.6pp. Similarly, the increase in walking (+5.6pp) and

cycling (+0.9pp) observed in the Dungarvan HTS is not replicated nationally, regardless of whether Dublin is included or excluded. The net change in walking mode share was therefore +5.4pp and cycling was +0.8pp, using NTS excluding Dublin as the national comparator.

FIG 4.5: DUNGARVAN HTS, MODAL SHIFT, ALL TRIPS, 2012-2016



The mode share of walking and cycling trips increased especially for short trips of less than 2km, as shown in Figure 4.6. Almost 60% of all trips of less than 2km were undertaken on-foot or by bike in Dungarvan in 2016, a change of +20pp from 2012. In particular, the walk mode share of trips of less than 2km increased significantly by +17pp, from 34% to 51%; the proportion of cycling trips less than 2km increased from 4% to 7%.

the results according to gender showed that the car mode share decreased and walking mode share increased relatively equally among men and women (Table 4.4). However, the increase in cycling mode share was higher amongst men (+1.4pp compared to +0.5pp) and this had widened an existing gender gap; cycling mode share in the 2016 HTS was 5.7% for men (up from 4.3% in 2012) and 1.8% for women (up from 1.2% in 2012).

A demographic analysis of the HTS results (2012 to 2016) was undertaken to explore some of the potential reasons for the observed modal shift. The analysis considered the influence of gender, age and socio-economic group on respondent's travel patterns. The analysis of

Examining the HTS results for mode share according to respondent's age highlighted the largest reduction in car mode share among younger respondents (Table 4.5). The largest reduction in car use was observed for the 25-29 age cohort (-19.2pp) with most of this

FIG 4.6: MODE SHARE BY TRIP DISTANCE, DUNGARVAN (HTS, ALL TRIPS)

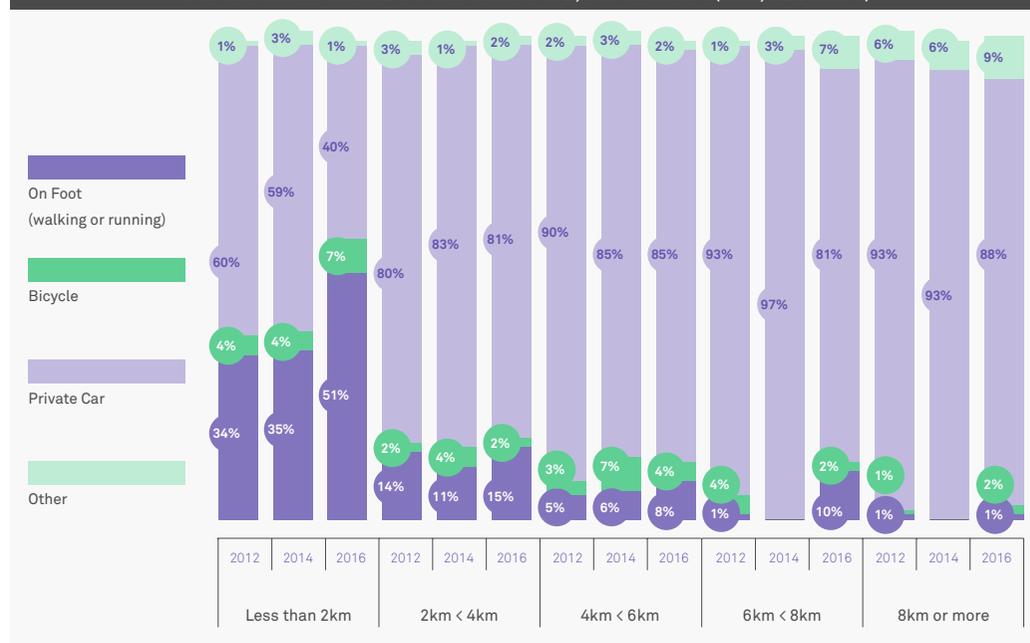


TABLE 4.3: COMPARISON OF HTS SURVEY RESULTS WITH NTS (ALL TRIPS)

	Dungarvan		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	72.0%	-7.4	66.8%	-4.0	81.3%	-0.8	74.3%	-2.2
On Foot	20.3%	5.6	24.8%	4.4	11.5%	0.2	14.6%	1.0
Bicycle	3.6%	0.9	3.1%	0.8	0.7%	0.1	1.7%	0.5
Public Transport	2.0%	0.8	2.9%	-0.1	2.0%	-0.4	5.5%	0.3
Lorry/ Motorcycle/ Other	1.5%	-0.2	1.6%	-0.9	4.0%	1.0	3.1%	0.4
Taxi	0.6%	0.3	0.8%	-0.2	0.5%	-0.1	0.8%	0.0

TABLE 4.4: % CHANGE IN MODE (2012 – 2016) ACCORDING TO GENDER (HTS, ALL TRIPS)

	Male		Female	
	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	70.5%	-7.7	73.4%	-7.3
On Foot	18.4%	5.8	21.8%	5.3
Bicycle	5.7%	1.4	1.8%	0.5
Bus	1.4%	0.2	2.5%	1.2
Rail	0.0%	0	0.1%	0
Taxi/Hackney	0.8%	0.5	0.3%	0.1
Van / Lorry	2.8%	-0.5	0.2%	0.1
Motorcycle	0.3%	0.2	0.0%	0
Other	0.1%	0.1	0.0%	0

share transferring to walking (+17.6) and a smaller amount to cycling (+1.9pp). Notably, the reduction in car use (-13.7pp) among 18-24 year olds involved transfer primarily to bus travel and cycling rather than walking; the 2012 baseline mode share for walking was 32% amongst this age group, the highest of all age categories.

HTS respondents were coded to a socio-economic group according to the occupation of the Chief Income Earner in the household following a standard classification (descriptions of each group are provided in Table 3.4 in Chapter 3). The largest proportion of modal shift in Dungarvan was observed among respondents in socio-economic group 'E' (low income

workers, unemployed and pensioners), which saw a change in car mode share of -18.9pp, from 70.3% in 2012 to 51.4% in 2016 (see Table 4.6). There was a corresponding increase in walking (+16.3pp, to 40.5% in 2016) and cycling (+3.8pp, to 6.2% in 2016). There were smaller but still significant changes in private car use of -6.8pp among socio-economic group 'D' (Unskilled and semi-skilled manual workers) and 'C'1 (Lower middle class) respectively. Notably, the most affluent group (socio-economic group 'A' and 'B') recorded a modest -3.2pp decrease in walking, which was in contrast to other social groups.

Even without the strong results of group 'E', the finding of reduced car mode share for all other

groups combined is still statistically significant (-3.1pp). However, the increase in walking mode share (+1.3pp) and cycling mode share (+0.3pp) for social groups 'A' to 'D' combined is not statistically significant.

Walking and cycling have therefore increased amongst a majority of socio-economic groups in Dungarvan but especially among group 'E' (low income workers, unemployed and pensioners). Dungarvan has the highest proportion of HTS respondents within group 'E' of the three STAs with 29% of all respondents in this group, compared to 19% in Limerick and 17% in Westport. This was reflected by a relatively high unemployment rate which has seen a

decrease of 2pp to 11% in 2016; much higher than the unemployment rate within the national comparator sample of 6%. Car ownership in 2016 was also lower in Dungarvan at 1.33 cars per household compared to 1.65 in the national comparator. External factors influencing the mode choices of this group, such as motoring costs, will have had a similar impact on the national comparator sample. It can therefore be assumed that factors internal to Dungarvan were responsible for encouraging this social group to change travel behaviour.

Further detail on the composition of the HTS sample is provided in the Household Travel Survey report in Appendix D.

TABLE 4.5: % CHANGE IN MODE (2012 – 2016) ACCORDING TO AGE GROUP (HTS, ALL TRIPS)

All trips, Dungarvan, change in mode share in percentage points, comparing 2012 with 2016							
	18–24	25–29	30–39	40–49	50–59	60–64	65+
Private Car	-13.7	-19.2	-8.7	-3.4	-3.1	-2.1	-5.6
On Foot	1.1	17.6	6.8	1.3	2.9	3.0	7.6
Bicycle	5.7	1.9	0.4	1.6	-0.1	-1.4	-1.3
Bus	9.8	-0.6	-0.2	-0.2	-0.3	0.6	0.6
Rail	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Taxi/Hackney	-0.5	-0.3	1.2	0.6	-0.1	-0.5	-0.2
Van / Lorry	-2.5	0.6	0.0	-0.1	1.1	-1.1	-0.9
Motorcycle	0.0	0.0	0.3	0.1	-0.4	0.7	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.9	-0.2
N (2016)	324	376	924	725	563	205	577

TABLE 4.6: % CHANGE IN MODE (2012 – 2016) ACCORDING TO SOCIO-ECONOMIC GROUP (HTS, ALL TRIPS)

All trips, Dungarvan, change in mode share in percentage points, comparing 2012 with 2016					
	AB	C1	C2	D	E
Private Car	1.1	-6.8	-1.1	-6.8	-18.9
On Foot	-3.2	5.1	-0.3	3.5	16.3
Bicycle	0.7	1.3	-0.9	0.4	3.8
Bus	1.3	0.0	1.5	0.8	0.2
Rail	0.2	0.0	0.0	0.0	0.0
Taxi/Hackney	0.1	0.0	1.7	0.3	0.0
Van / Lorry	-0.2	0.6	-0.8	1.2	-1.8
Motorcycle	0.0	-0.2	0.0	0.5	0.2
Other	0.0	0.0	0.0	0.0	0.2
N (2016)	529	875	525	759	827

Employment Trips

The change in mode share for employment trips between 2012 and 2016 in Dungarvan is presented in Figure 4.7. Car mode share changed by -5.2pp, from 88% in 2012 to 82.8% in 2016. The level of change recorded was greater between 2014 and 2016 than between 2012 and 2014. However, some of this reduction in car mode share is linked to the increase in the mode share of ‘other’ modes which increased by 2.6pp, with the largest component of this being an increase in ‘van or lorry’ of +1.5pp.

Despite the fact that almost 40% of employment trips in Dungarvan are less than 4km in distance, there was limited increase in walking and cycling for employment trips. Walking mode share

increased by +1.7pp from 7.6% in 2012 to 9.3% in 2016, with all of this increase recorded between 2014 and 2016. Cycling mode share increased slightly between 2012 and 2014, from 2.2% in 2012 to 3% in 2014, but dropped again in 2016 to 2.3%, 0.1pp above the 2012 baseline.

A direct comparison of mode share for commuting journeys only with the National Travel Survey is not possible as the National Travel Survey journey purpose of ‘work’ includes both commuting and business travel. On this basis, the HTS results have been updated to include both commuting and business trips, as shown in Table 4.7. The NTS (excl. Dublin) data shows that the reduction in private car mode

share nationally for ‘work’ trips was -0.2pp. This is substantially lower than the reduction in car mode share for commuting and business travel combined in Dungarvan of -2.7pp. However, as outlined above, a large part of the decrease in private car mode share in Dungarvan is linked to the increase in the mode share of ‘other’ modes particularly ‘van or lorry’ and this is also the case for commuting and business travel combined. The combined increase in walking and cycling mode share for these trips in Dungarvan was +0.4pp, which represents a minor increase, although it still contrasts with the decrease of -0.4pp in the combined mode share of walking and cycling in the national control.

An additional source of data on mode share for trips to work is provided by the Census, which records individuals ‘usual’ mode for travel to work (as opposed to their travel on a particular

¹⁶ Walking and cycling mode share have been combined in tables for specific trip types based on CSO advice that for some trip types, the NTS sample size was too small to yield statistically reliable figures for modes with small numbers of trips.

FIG 4.7: DUNGARVAN HTS, EMPLOYMENT TRIPS, 2012-2016

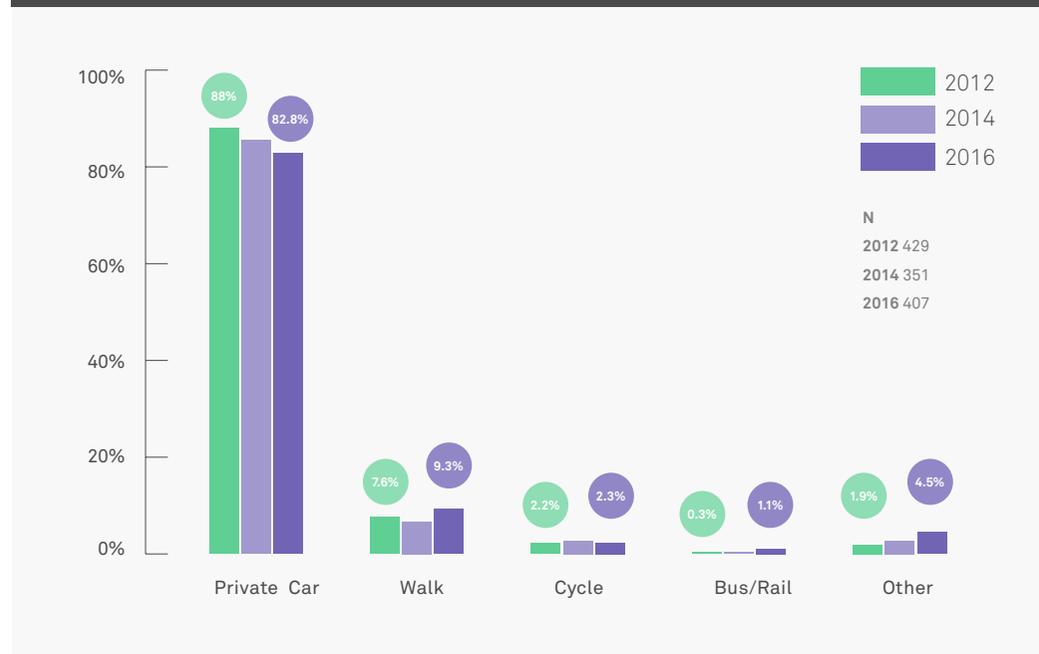


TABLE 4.7: WORK TRIPS (COMMUTING AND BUSINESS TRAVEL COMBINED) - COMPARISON OF HTS SURVEY RESULTS WITH NTS

	Dungarvan		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	82.8%	-2.7	75.5%	-1.7	81.5%	-0.2	73.1%	-1.5
Walk / Cycle ¹⁶	10.4%	0.4	16.82%	4.4	6.6%	-0.4	11.8%	1.8
All Other	6.8%	2.3	7.7%	-2.7	11.9%	0.6	15.1%	-0.4

day). Changes in mode share for employment trips within the Dungarvan STA were compared against the neighbouring towns of Youghal and Clonmel, using Census 2011 and 2016 results (Table 4.8).¹⁷ A slight reduction in car mode share in Dungarvan was recorded compared to an increase in Youghal and no change in Clonmel. The mode share for walking is slightly higher in Clonmel at 15.4% while the cycling mode share in Dungarvan (2.5%) is higher than Clonmel (1.7%).



Education Trips

Car mode share for escorted education trips¹⁸ changed by **-10.1pp** between 2012 and 2016, from 90.3% to 80.2% (Figure 4.8). The walking mode share increased by **+9.9pp** between 2012 and 2016, from 9% in 2012 to 18.9% in 2016. No escorted education trips were made by bicycle in Dungarvan in either 2012 or 2016.

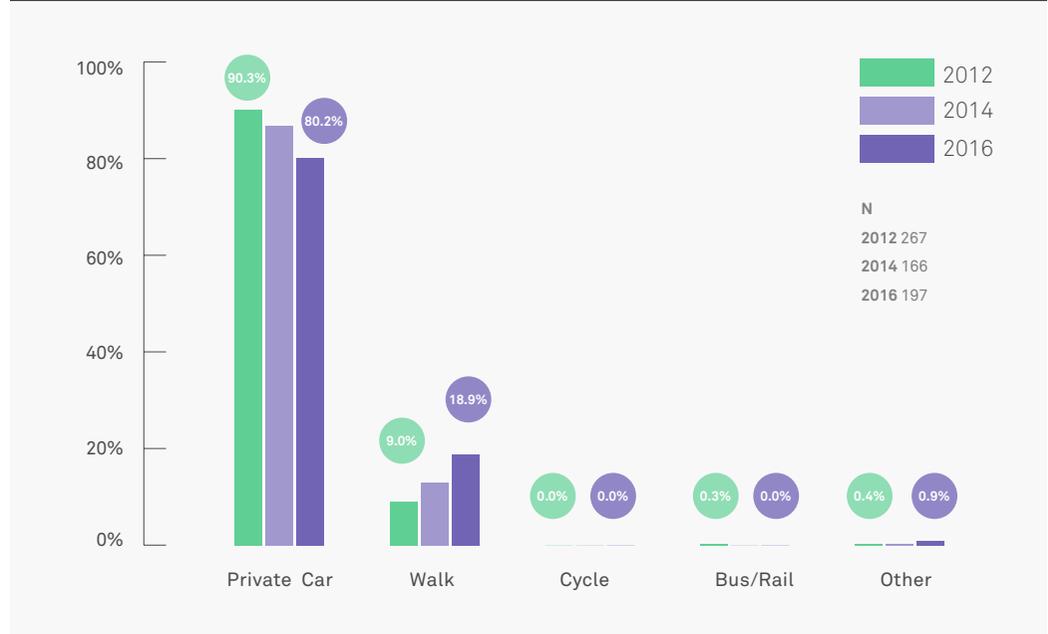
Unfortunately, the available NTS data does not allow for a separation of escorting/companion trips into more specific trip purposes and therefore data on 'escort to education' trips is not available for direct comparison with the HTS. However, Census results from 2011 and 2016 for the 'usual mode of travel to school or college' were available for Dungarvan, Youghal and Clonmel. The data showed a decrease in the mode share of walking (-1.5pp) and public transport (-2pp) in Dungarvan (Table 4.9). The decrease in mode share for walking was higher than both Youghal (-0.1pp) and Clonmel (-1.2pp). The mode share for cycling in Dungarvan increased by +3.1pp, to 5.6%. This increase contrasted strongly with the comparator areas, as cycling mode share in Youghal changed by -0.3pp, while in Clonmel there was an increase of +0.4pp to 1.4% in 2016. These results showed a relatively low level of change across the modes, perhaps reflecting the nature of the question asked in the Census, with its focus on the usual mode used.

¹⁷ It should be noted that the methodology and question of the Census were different to the HTS and NTS, and therefore comparisons between datasets should not be undertaken. The Census data has only been used to compare the STAs with neighbouring towns based on 'normal mode' of travel to work, as opposed to travel the previous day.

¹⁸ Given that there are no third level institutions in Dungarvan, the number of independent education trips recorded in the HTS is relatively small. Therefore, only escorted education trips are presented in this section. Escorted education trips are those taken by persons over 18 years of age with another person to any level of education. The age of the person being escorted is not identified, but the majority of these trips are assumed to be school trips. Unfortunately, the NTS does not record the purpose of escorted trips and therefore data is not available for direct comparison with the HTS.

	Dungarvan		Youghal		Clonmel	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	72.8%	-0.3	75.1%	1.6	75%	0.0
Walk	15.2%	-0.1	11.5%	-1.3	15.4%	-0.9
Cycle	2.5%	-0.1	0.6%	-0.1	1.7%	0.1
Bus/Rail	0.7%	0.0	2.1%	0.0	0.9%	0.0
Other	8.9%	0.4	10.7%	-0.2	7%	0.8
Total (n)	3619		2637		5877	

FIG 4.8: DUNGARVAN HTS, ESCORTED EDUCATION TRIPS, 2012-2016



Non-Commuting Trips

The final trip purpose considered was non-commuter trips, which were defined as all trips excluding trips to work, education and escorting trips. The HTS data showed that car mode share for non-commuting trips changed by -6.4pp, from 74.2% in 2012 to 67.8% in 2016 (Figure 4.9). Walking mode share in the same period increased by +6pp from 18.7% in 2012 to 24.7% in 2016. All of the increase in walking was recorded between 2014 and 2016. There was a minor increase in cycling of +0.6pp from 3.6% in 2012 to 4.2% in 2016, with all change recorded between 2014 and 2016.

The change in mode share for non-commuting trips was compared against the NTS.¹⁹ The NTS (excl. Dublin) data shows that there was a marginal increase in private car mode share nationally for non-commuting trips of 0.1pp. In contrast, car mode share for non-commuting trips in Dungarvan reduced by -6.2pp. The combined increase in walking and cycling mode share observed in Dungarvan for these trips (+6.7pp) also contrasts with the national control where an increase of +0.1pp was observed.

¹⁹ Note that within the HTS data, business/other work related trips have been included as 'non-commuting' trips, but this trip type is excluded from the NTS non-commuting data, as the NTS does not separate commuting and other work trips. However, these trips make up only a small proportion of the total non-commuting trips in the HTS sample.

FIG 4.9: DUNGARVAN HTS, NON-COMMUTING TRIPS, 2012-2016

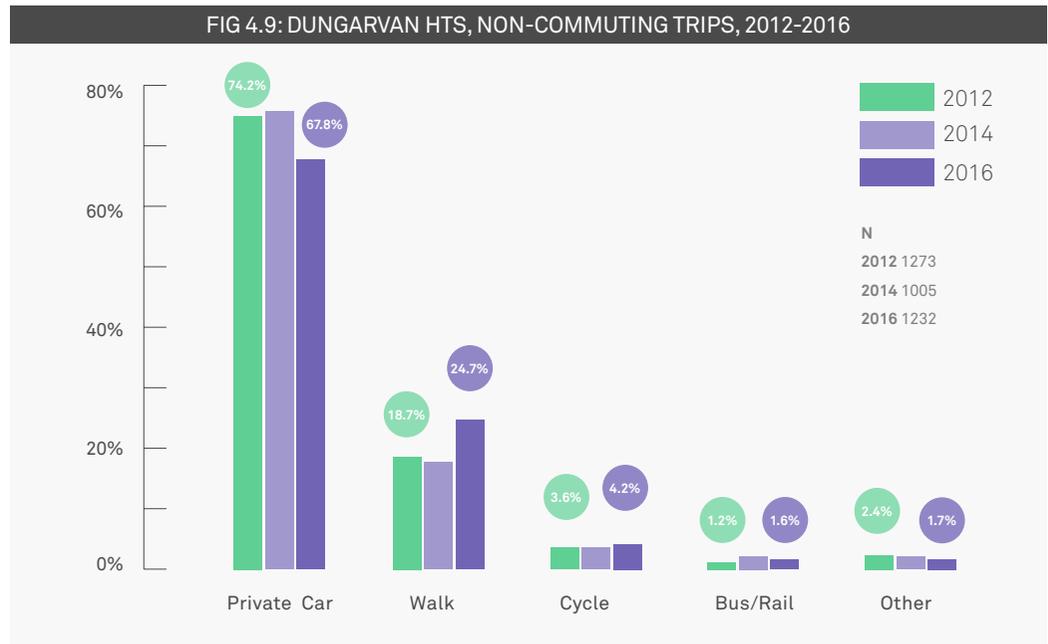


TABLE 4.9: USUAL MODE OF TRAVEL TO SCHOOL OR COLLEGE – PUPILS/STUDENTS AGED 5+, CENSUS 2011 – 2016

	Dungarvan		Youghal		Clonmel	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	60%	0.3	62.6	-2.7	64.1%	1.2
Walk	29.7%	-1.5	17.6%	-0.1	23.9%	-1.2
Cycle	5.6%	3.1	0.2%	-0.3	1.4%	0.4
Bus/Rail	4.3%	-2.0	19.1%	2.9	10.3%	-0.3
Other	0.3%	0.1	0.5%	0.3	0.4%	-0.1
Total (n)	2072		1715		3089	

TABLE 4.10: NON-COMMUTING TRIPS - COMPARISON OF HTS RESULTS WITH NTS

	Dungarvan		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	67.8%	-6.4	64.4%	-3.1	79.7%	0.1	72.8%	-1.6
Walk / Cycle	28.9%	6.7	30.7%	6.2	15.5%	0.1	19.7%	1.3
All Other	3.3	-0.3	5%	-3.1	4.9%	-0.2	7.5%	0.3

Summary of Modal Shift in Dungarvan

The headline changes observed between 2012 and 2016 in the mode split of trips in Dungarvan were therefore:

- There was a net reduction of 6.6pp in car use for all trips, compared to a 5.4pp increase in walking and 0.8pp increase in cycling. There was also a 1.2pp net increase in public transport use;
- A higher increase in cycling mode share for all trips was observed amongst men (+1.4pp gross change) than women (+0.5pp gross change);
- There was a noticeable shift in gross mode share for all trips from car (-13.7pp) to cycle (+5.7pp) and bus (+9.8pp) amongst 18-24 year olds, and a shift from car (-19.2pp) to walking (+17.6pp) among 25-29 year olds;

- The largest change in car mode share (-18.9pp gross change) for all trips was observed amongst socio-economic group E, who also recorded increases in mode share for walking (+16.3pp) and cycling (+3.8pp gross change). There was little change in the mode share of bus (+0.2pp gross change) amongst this group;
- For employment trips, there was a reduction in car mode share of -5.2pp (gross change), with the majority of this decrease accounted for by an increase in the mode share of both 'other' modes (+2.6pp gross change) and walking (+1.7pp gross change);
- Using 2012 and 2016 National Travel Survey data (excl. Dublin), there was a net change in car mode share for the combined trip purposes of travel to work and business travel of -2.5pp. However, as outlined above, a large part of the decrease in car mode share in Dungarvan is linked to the increase in the mode share of 'other' modes; and
- For escorted education trips there was a shift in mode share from car (-10.1pp gross change) to walking (+9.9pp gross change).



4.4.2 Attitudes and Perceptions

As outlined in Chapter 2, the HTS included a series of questions to ascertain respondent's attitudes and perceptions of various aspects of their town. These questions were asked as part of the 2012, 2014 and 2016 HTS, in both the STAs and in a comparator sample from across Ireland. The focus of the analysis has been on any reported change between 2012 and 2016, which is summarised below:

- The proportion of respondents who found it pleasant to walk in Dungarvan increased from 90.8% in 2012 to 97.7% in 2016, a +6.8pp change. By comparison, the proportion in the control sample who said it was pleasant to walk in their area increased by +0.5pp, to 95.7% over the same period. The net change within Dungarvan was therefore +6.3pp;
- The proportion of respondents who believed their area was 'safe to walk about and get exercise' increased from 76.2% in 2012 to 92.1% in 2016, a +15.9pp change. By comparison, there was a 2.6pp decrease in the control sample from 76.0% to 73.4%. The net change within Dungarvan was therefore +18.5;
- The proportion of respondents who feel their area is safe to walk in (considering risk from traffic) increased from 80.3% in 2012 to 92.6% in 2016, a +12.3pp change. By comparison, there was a slight decrease in the control from 75.9% to 75.1%, a change of -0.8pp. The net change within Dungarvan was therefore +13.1pp;

- The proportion of respondents who feel their area is safe to cycle in (considering risk from traffic) increased from 84.4% in 2014 to 89% in 2016. By comparison, there was a decrease in the control sample from 68.4% in 2014 to 60.7% in 2016. The net change within Dungarvan was therefore +12.3pp;
- The proportion of cyclists who said it was pleasant to cycle in Dungarvan increased from 89.5% in 2012 to 94.2% in 2016, a +4.7pp change. By comparison, the proportion of cyclists in the control sample who said it was pleasant to cycle in their area changed by -5.0pp to 86.1% over the same period. The net change within Dungarvan was therefore +9.7pp; and
- The main impetus for increased walking and cycling among respondents was for exercise, improved health and wellbeing (82% of pedestrians and 75% of cyclists).

These results report a substantial net improvement in the attitudes and perceptions of Dungarvan residents regarding access and amenity in the town and the level of perceived safety. As outlined in the Logic Map (Figure 4.4), changes in individuals' awareness, attitudes and perception of sustainable transport and facilities provided are important first and second order outcomes. As such, they are precursors to achieving changes in travel behaviour and thereby will have contributed to the changes in mode share reported in Dungarvan.

A central challenge within the evaluation was to consider the relative contribution of the various infrastructure and behaviour change activities to the observed changes in both attitudes/perceptions and mode share. The following sections explore the contribution narrative for Dungarvan.

4.4.3 Infrastructure Investment Outcomes

Infrastructure made up 81% of the overall expenditure on Smarter Travel in Dungarvan. This investment was planned on the basis that the transport network in 2012 made limited continuous provision for pedestrians and, especially, for cyclists.

Improvements to the perceived safety, convenience and attractiveness of walking and cycling were the key planned outcomes of the investment made in infrastructure. As such, improvements to infrastructure were perceived as central to encouraging modal shift from car to sustainable modes.

This evaluation has considered the contribution of infrastructure investment to the above observed changes in local resident's perceptions/attitudes, and thereby the contribution to changes in mode share. The infrastructure investment was analysed in the following six packages, with the contribution of each of these on travel behaviour and attitudes considered:

- Off-road walking and cycling infrastructure;
- On-road cycling infrastructure;
- Grattan Square redevelopment;
- Smarter Travel Centre;
- Traffic and parking management; and
- E-Working Centre.

Within each of these, the following information is provided:

- Intervention objectives;
- Interventions delivered;
- Outcomes and impacts, focusing on the contribution narrative; and
- Lessons learnt in terms of transferability and scalability.



GREENWAYS

Intervention Objectives

The main objectives of providing greenways were:

- To provide safe facilities, segregated from road traffic;
- To provide a continuity of facility for walking and cycling; and thereby
- To encourage modal shift for commuting, education and leisure trips.

Interventions Delivered

Almost 5km of Greenway was delivered in Dungarvan as follows (Figure 4.10):

- **'The Track' (PR1):** This 3.9km greenway connects Dungarvan town and key tourist and leisure destinations, including Clonea Beach, The Gold Coast Hotel, the Golf Course and caravan/camping facilities. The route was developed along a disused railway line which had been poorly set out in terms of surface, width and overall usability. This route is recognised as the main Smarter Travel investment in Dungarvan and now forms a key section of the more recently developed 46km Waterford Greenway; and
- **Fr Twomeys Road (SR16):** This greenway is approximately 0.75km long and connects the Spring Roundabout to the Youghal Road, running parallel to the N25. The facility provides a quieter and in some cases more direct alternative to travelling on the N25.

FIG 4.10: GREENWAYS DELIVERED IN DUNGARVAN 2011-2016

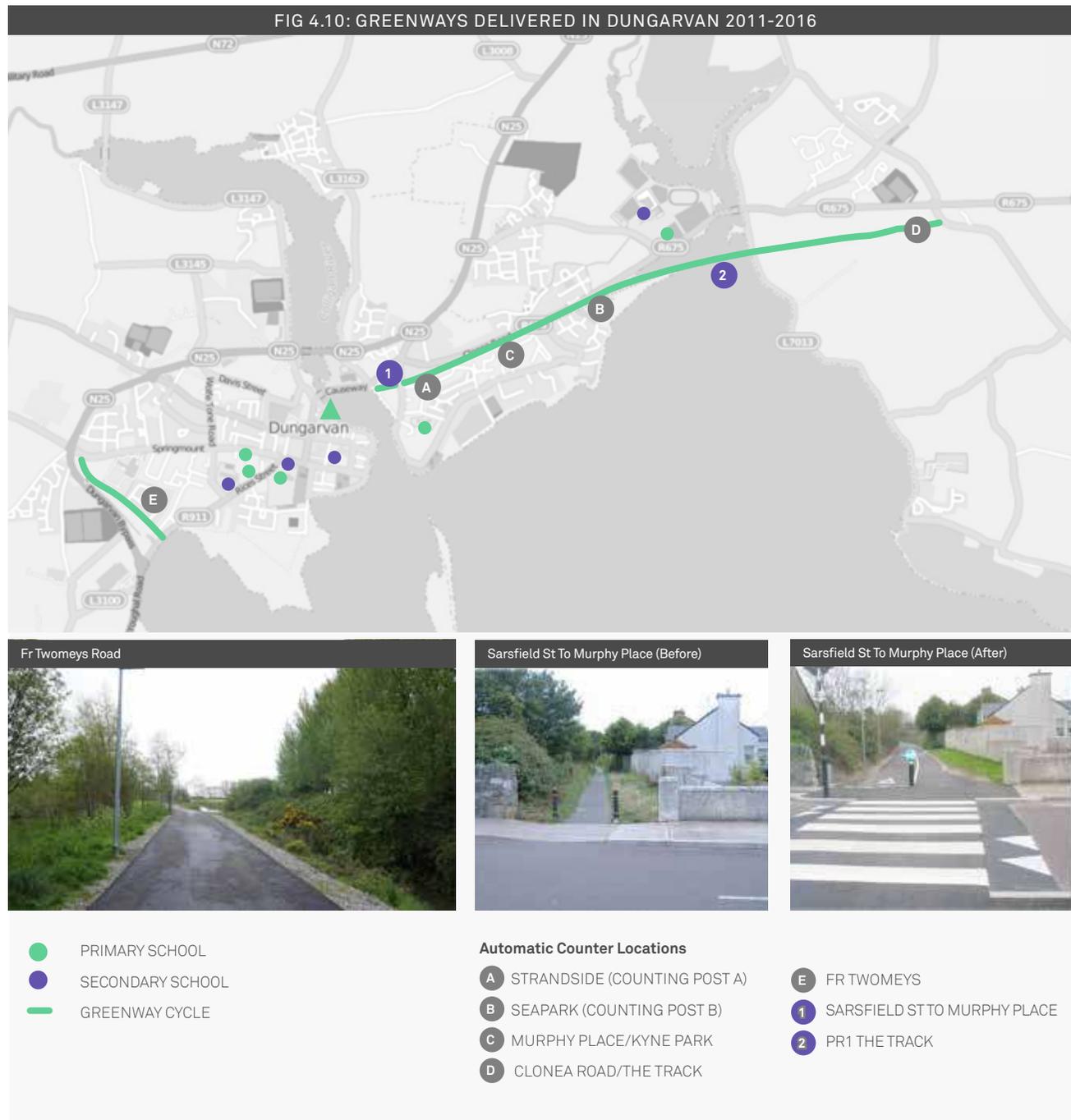


FIG 4.11: PEDESTRIAN VOLUMES AT 'THE TRACK' ON STRANDSIDE (2013-2016)

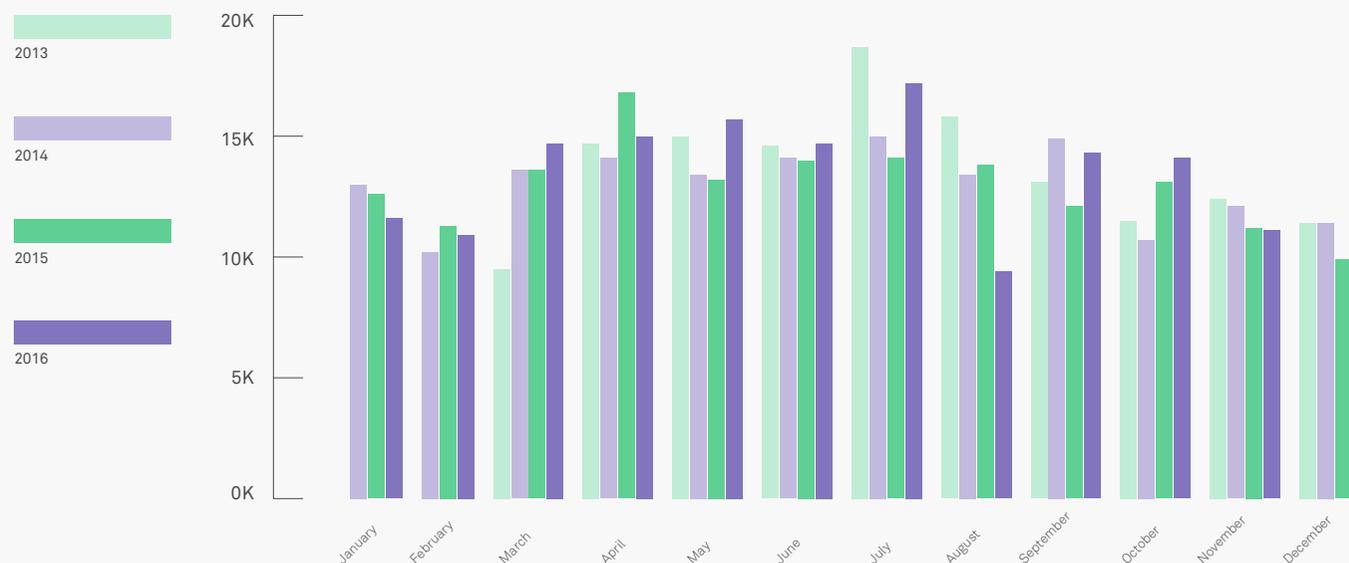
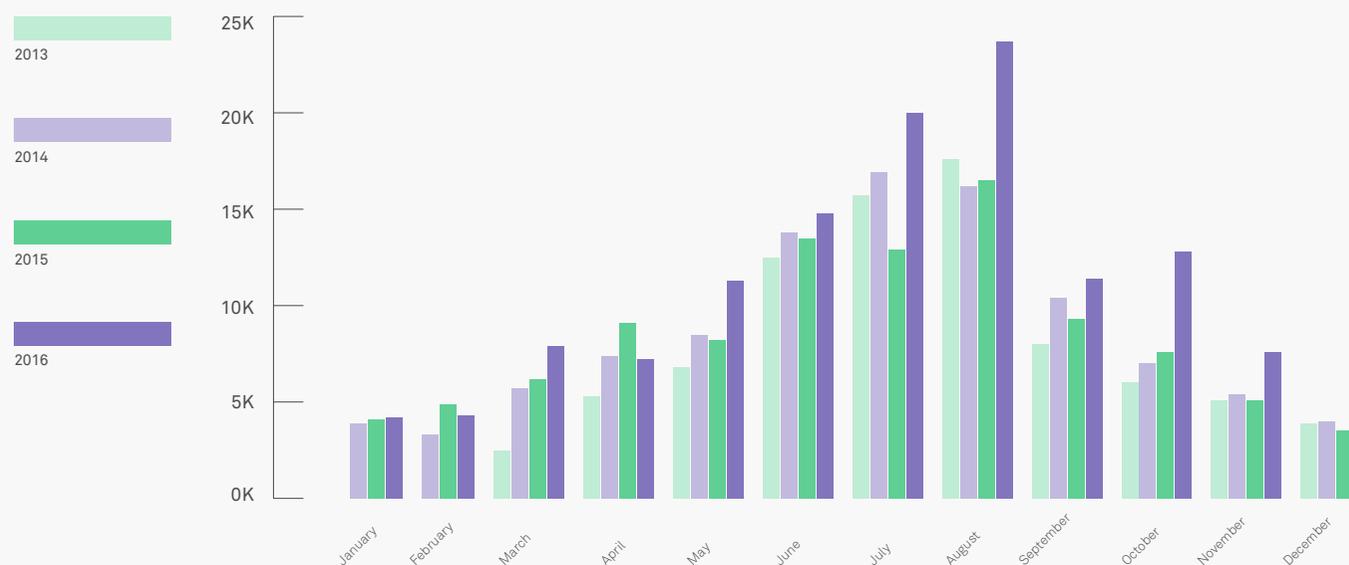


FIG 4.12: CYCLIST VOLUMES AT 'THE TRACK' ON STRANDSIDE (2013-2016)



Outcome of Greenways

Various evidence sources are available regarding the impact of greenways including permanent counters along the routes and feedback from focus groups. Automatic counters installed on 'The Track' have recorded the volume of pedestrians and cyclists using the route since 2013. As shown in Figure 4.11, pedestrian volumes using the facility have been consistently high since 2013, with an average monthly count of over 13,000 recorded at Strandside (the section of greenway closest to the town centre designated as location 'A' in Figure 4.10).

The volume of cyclists on the route, shown in Figure 4.12, indicated a more seasonal trend, with a peak in July and August. The data also showed an increase in cyclist volumes of 35% between August 2013 and August 2016. Such an increase would be expected for a new facility such as 'The Track', as both pedestrians and cyclists adjust to its availability. However, this increase is likely to include new cycling trips and those abstracted from other routes in Dungarvan. It is also likely that the completion of the first section of the Waterford Greenway (not funded through Smarter Travel) in 2016 contributed to this increase in use.

To understand more about the types of trips undertaken on the greenways, and whether these were new or re-routed activities, intercept surveys were undertaken on 'The Track' for two days in May 2015 (from 08:30 to 19:30). The results indicated that the most common trip purpose was recreational (47%) and the second was sightseeing (or tourism) at 18%. Just 9% of trips were for the purpose of commuting to work and a further 9% were education related trips.

Analysis of pedestrian and cyclist volumes using the greenway on a daily basis provided more evidence regarding the type of trips using the facilities. While there were steady, albeit low, volumes using the ‘The Track’ throughout the day, usage was generally lower in the mornings than during the afternoon and evening. This is demonstrated in the average hourly distribution of pedestrians and cyclists during 2015 at Strandside, shown in Figures 4.13 and 4.14.

Evidence from the counters and intercept surveys therefore indicated that the greenways, ‘The Track’ in particular, were used mainly for non-commuting trips. This was supported by findings from qualitative research, which suggested that while feedback on ‘The Track’ was overwhelmingly positive, the greenway was perceived as most appropriate for recreational trips. Indeed, The Track was perceived to have been very successful in this regard; some respondents suggested it is often too busy to use, especially at weekends.

There was also evidence from qualitative research to suggest that greenways played an important role in broadening the appeal of recreational cycling in Dungarvan. This included increased cycling among less confident cyclists and families with young, inexperienced cyclists. The reason for this is that the greenways are considered to be very safe and enjoyable to use, thereby overcoming key barriers to cycling. Participants of a Community Cycling Audit²⁰ undertaken by AECOM in Dungarvan indicated that cyclists of all levels of cycling confidence felt at ease using cycleways.

²⁰ Members of the public were escorted by bike around the Dungarvan cycle network to understand the perception of various types of infrastructure delivered.

FIG 4.13: AVERAGE HOURLY PEDESTRIAN VOLUMES AT ‘THE TRACK’ ON STRANDSIDE (2015)

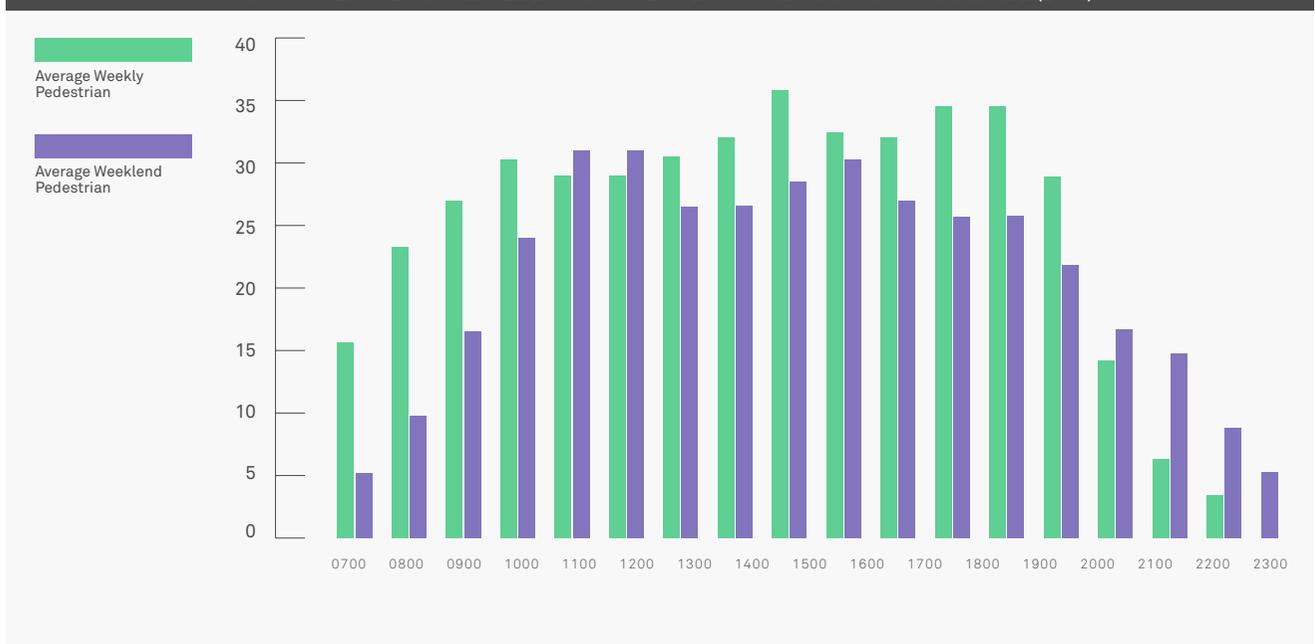
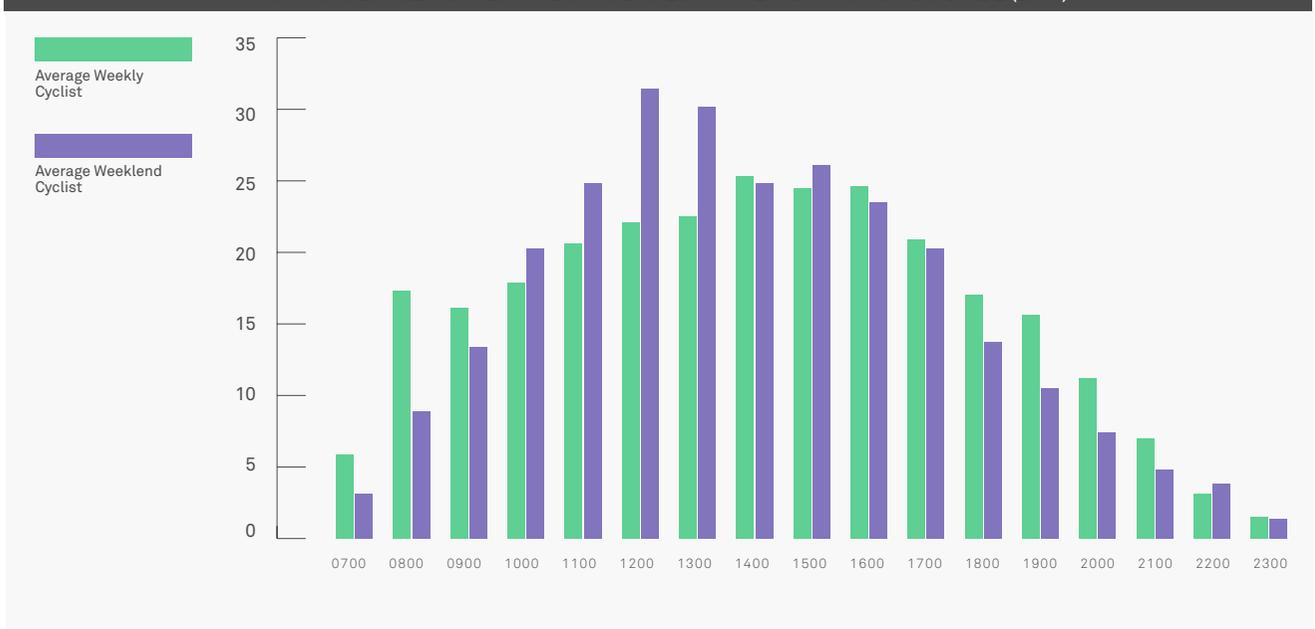


FIG 4.14: AVERAGE HOURLY CYCLIST VOLUMES AT ‘THE TRACK’ ON STRANDSIDE (2015)





“Our cycle track is a wonderful amenity and once you get off the main road and onto that it’s wonderful”

– Commuters Focus Group, Dungarvan

“Every place is more accessible now than before, like you could cycle out to the beaches or the hotel, just use the tracks and stuff and go anywhere now, I suppose it’s easier to get from A to B, whether it be on foot, cycle, whatever way you want”

– Commuters Focus Group, Dungarvan

“It’s a nice wide open space and it’s lovely seeing kids cycling. I think in a couple of years’ time there’ll be a lot more people cycling because of the Greenway.”

– Commuters Focus Group, Dungarvan

“My bike never came out of the shed until the Greenway opened and now I cycle every weekend but I hadn’t cycled for 20 years because I was scared of the traffic.”

– Parents Focus Group, Dungarvan

There is evidence therefore that greenways delivered in Dungarvan have contributed to the improved perceptions of safety and access amongst residents, as recorded by the HTS. This will, in turn, have contributed to the observed modal shift for non-commuting trips. Walking increased by 6pp to 24.7% in 2016 and cycling increased by +0.6pp to 4.2%; this was highest proportion of cycling trips for non-commuting among all STAs.

However, the HTS results indicate that the greenways have not achieved one of their primary objectives of encouraging modal shift for commuting to work. The extent of modal shift between 2012 and 2016 for employment trips was very low (1.7pp increase in walking trips 2012-16 and 0.1pp increase in cycling). Furthermore, while there was evidence of an increase in escorted trips to school on foot (9.9pp increase to 18.9% in 2016) there was no evidence to suggest that the greenways had influenced this change. Various explanations have been put forward by participants of qualitative research to explain why the greenways have not led to an increase in walking and cycling trips for the commute to work and education, including:

- Although there have been significant improvements in the image of both walking and cycling within the community in Dungarvan, feedback from focus groups suggested that some people perceived greenways as targeting walking and cycling for non-commute purposes:

“The way everybody sees it is to encourage people to cycle and walk as a leisure activity”

– Parents Focus Group, Dungarvan

- There remained few disincentives to drive for the commute in Dungarvan as congestion was not an issue, even in peak hours, and parking was generally free for commuters. As outlined in later sections, demand management measures to discourage driving were not adopted as part of the Dungarvan STA programme;
- Focus group participants felt that there was a lack of connectivity to ‘The Track’ from adjacent housing estates. The delivery of new access points had not been straight forward and one newly opened access point had to be closed due to negative feedback in relation to anti-social behaviour:

“They did open a route to the cycle track for about a month and we used to use it all the time while it was open because it was very safe but then they closed it again. I was surprised because I would have thought the whole point of Smarter Travel would be to provide safe and easy access to get them walking and cycling to school.”

– Parents Focus Group, Dungarvan

Lessons Learnt



The high recorded level of walking and cycling on 'The Track' was considered by Go Dungarvan team members as being instrumental in the allocation of funding to extend the greenway to Waterford City. The full route was officially opened in March 2017, following investment of approximately €15 million of non-STA funding. At 46km, the Waterford Greenway is the longest in Ireland. The impact of the full route on tourism in Dungarvan was universally recognised by participants of a focus group organised by AECOM in June 2017. All participants agreed that Dungarvan was experiencing an explosion in tourism, with the greenway being the main attraction. Stakeholders anticipate that the greenway will continue to attract visitors throughout the year, thereby extending the tourist season in the town.

Greenways similar to those delivered in Dungarvan can be delivered in many urban environments but can be constrained by surrounding land uses. Key lessons learnt in Dungarvan from delivery of greenways are as follows:

- Investment in greenways has encouraged new trips and modal shift for non-commuting trips but has not influenced modal choice for commuters. Investment in this infrastructure and its objectives should be carefully reviewed during planning and design stages.
- Greenways are likely to attract less confident cyclists with limited experience of cycling on-road. It is therefore critical that measures are put in place to improve safety where off-road facilities merge on-road, especially at junctions.
- Frequent connections need to be provided from greenways to adjacent trips origins/destinations to maximise the catchment area for travel and potential for modal shift for commuting trips.
- When greenways are delivered, they need to be promoted on the basis of their potential for commuting in addition to the recreational uses with which they are most commonly associated.
- All facilities delivered need to be well maintained to sustain use, especially by cyclists.

“The greenway is a big draw. People who had heard of Dungarvan and thought ‘we must go’ now have a definite reason to come.”

– *Tourism Focus Group, Dungarvan*

“We’ve seen growth every year, nothing massive but this year it’s definitely gone up a bit more. We’re seeing a lot more families, mother and father and the kids all going out and it’s just about leisure.”

– *Tourism Focus Group, Dungarvan*



ON-ROAD CYCLING INFRASTRUCTURE (Cycle Lanes, Cycle Tracks and Shared Cycle/Pedestrian Facilities)

The key objectives of the on-road infrastructure were:

- To create safe, comfortable routes for cycling; which
- Form a coherent, consistent network (together with the greenway sections of the network), which improves actual and perceived safety for cyclists and serves cyclist desire lines; and thereby
- To encourage modal shift for commuting, education and leisure trips.

Interventions Delivered

Cycle facilities adjacent to roads (as distinct from greenways), including cycle lanes and cycle tracks were proposed as a key component of the Go Dungarvan bid, alongside the proposed sections of greenways. However, as outlined in Section 4.3, the infrastructure delivered was more piecemeal in its distribution than originally planned. A large proportion of the planned on-road facilities were not delivered in lieu of more extensive redevelopment of Grattan Square.

As outlined in Section 4.3, a range of schemes were delivered. Schemes consisting of fully on-road cycle lanes include the Coolagh Road to the northeast of the town (approximately 1.9km) and Duckspool Road to the east (850m), which is located between 'The Track' greenway and two schools. Other cycling schemes delivered varied in their design and included some physical separation between the cycle facility and the main carriageway, including:

- **Youghal Road (PR4):** This 1.1km cycle track is located between the Youghal Road roundabout and Dungarvan and there are four schools located in the vicinity of the route. Dedicated cycling facilities have been provided along both sides of Youghal Road along with new crossing points, upgraded lighting and traffic calming. The cycling facility is segregated from traffic for most of the route by a planted verge, which has also improved amenity value of the route;
- **N25 Shared Cycle and Pedestrian Path (SR15):** This 2.4km cycle track is shared with pedestrians and runs alongside the N25 to the east and north of the town between the Spring and Coolagh Roundabouts. The scheme also includes new and upgraded crossings of the N25 and street lighting improvements; and
- **Ballinroad Link (SR1):** The most significant feature delivered on this route was a pedestrian/cycle walkway on Barnawee Bridge which was a key pinch point on the route. The 1.7km scheme also included a cycle facility at the same level as the footpath, in addition to the new crossing and traffic calming provisions.

Outcome of On-Road Cycling Infrastructure

Unfortunately, there were no automatic counters on the cycle lanes and cycle tracks in Dungarvan (in contrast to the greenways) and therefore there was limited quantitative evidence available through which to determine their contribution to observed outcomes. Traffic counts were undertaken in April and October each year of the evaluation and provide some insight to the volume of both pedestrians and cyclists at various points across Dungarvan. The results showed no significant change²¹ in the volume of pedestrians/cyclists at count sites close to on-road cycle lanes on the Coolagh Road, or along the new shared path on the N25, the longest cycle facility delivered (with the exception of 'The Track' greenway). It was therefore not possible to determine the contribution of these facilities to the STA-level modal shift between 2012 and 2016. However, the lack of connectivity afforded by the facilities is considered likely to have contributed to the lower than targeted modal shift amongst commuters, as some links to the town centre and employment areas have not been completed.

Participants of the Dungarvan Community Cycle Audits highlighted that they felt anxious using the cycle tracks, mainly because of the close proximity to traffic, especially at junctions. Low levels of cycling confidence within the community²² contributed to this view with less than half (46%) of HTS respondents saying they are confident enough to cycle on-road with traffic. Where cycle tracks are shared, both cyclists and pedestrians felt uncomfortable especially where facilities were narrow. There was also feedback during qualitative research that some cycle tracks were considered to be poorly maintained, which acted as a barrier to use.



²¹ It should be noted that the timeframe of these surveys was limited to one weekday and one Saturday in April and October each year and therefore does not provide a robust reflection of travel patterns in the area.

²² Dungarvan HTS 2016 results

This evidence indicated that the cycle tracks had not achieved the first two objectives of providing safe, segregated and continuous facilities. As a consequence, the perception of walking and cycling safety/comfort on cycle tracks was low and therefore the facilities are unlikely to have contributed substantially to either the observed improvements in attitudes or mode choice. Furthermore, feedback from qualitative research indicated poor perceptions remained in 2016 about the safety and attractiveness offered by the on-road facilities. This was largely driven by the fact that the facilities were not continuous, thereby forcing cyclists to share road space with traffic without any designated facilities. Traffic volumes were perceived by participants as intimidating and driver behaviour was perceived as unsympathetic to vulnerable road users. These factors have not contributed to the changes observed in HTS respondent attitudes to the ease and safety of travelling around Dungarvan.

“If you’re not on a designated cycle track it’s dangerous, drivers are vicious towards cyclists, they get as close to you as they can”

– *Commuter Focus Group, Dungarvan*

“There are some real oddities about the cycle paths. They only go so far and then stop”

– *Commuter Focus Group, Dungarvan*



“The first thing I said when I used the cycle paths was ‘whoever designed this doesn’t cycle’”

– *Commuter Focus Group, Dungarvan*

This conclusion is further supported by the fact that key roundabouts and junctions within the town, included in the original STA programme, were not upgraded for use by pedestrians and cyclists. These still therefore acted as a barrier for both pedestrians and cyclists, particularly the Strandside and Shandon roundabouts.

Lessons Learnt

The range of on-road cycling infrastructure is transferable to most urban environments. However, lessons learnt in Dungarvan included:

- On-road cycle lanes which are/perceived to be too narrow, run close to traffic and do not form part of an integrated and continuous network will not address key barriers such as low levels of cycling confidence or perceived safety concerns.
- To maximise the potential of on-road infrastructure to encourage modal shift it should be delivered as part of an integrated network, to a high standard and with wide lanes and treatment at junctions.
- Infrastructure which is largely separated from the main carriageway may attract less confident cyclists with limited experience of cycling on-road. It is therefore critical that measures are put in place to improve safety where off-road facilities merge on-road, especially at junctions.
- Cycle tracks with shared pedestrian and cyclist facilities (on the N25 for example) are perceived to create excessive conflict between users.
- All facilities delivered need to be well maintained to sustain use, especially by cyclists.
- Based on the impact of both on and off-road infrastructure in Dungarvan, cycle networks should ideally be composed mainly of off-road facilities with gaps met by high quality on-road infrastructure. This should be complemented by focused behavioural change measures (outlined in the next section).



FIG 4.15: CYCLING INFRASTRUCTURE DELIVERED IN DUNGARVAN 2011-2016



Coolagh Road



Ballinroad Link (Bridge)



Youghal Road (Before)



Youghal Road (After)



N25 Shared Walking & Cycling Path



Ballinroad Link

- SMARTER TRAVEL PRIMARY SCHOOL
- SMARTER TRAVEL SECONDARY SCHOOL
- GREENWAY / CYCLEWAY
- ON-ROAD CYCLE LANE (No Segregation)
- CYCLE LANE (Part Segregated)
- SHARED USE PATH (Cyclists & Pedestrians)

- Automatic Counter Locations**
- A STRANDSIDE (COUNTING POST A)
 - B SEAPARK (COUNTING POST B)
 - C MURPHY PLACE/KYNE PARK
 - D CLONEA ROAD/THE TRACK
 - E FR TWOMEYS

- 1 YOUGHAL ROAD
- 2 THE TRACK
- 3 N25 RING ROAD
- 4 CAPPOQUIN ROAD
- 5 FR TWOMEYS ROAD

- 6 DUCKSPool
- 7 COOLAGH ROAD
- 8 BALLINROAD LINK
- 9 GOLD COAST ROAD

GRATTAN SQUARE REDEVELOPMENT

Intervention Objectives

The most significant infrastructure cost in the Go Dungarvan programme was on the redevelopment of Grattan Square. Getting through the Square, particularly by bike, was perceived by the community as a barrier to modal shift due to the high volume of traffic and the parking arrangement. The objective of the redevelopment was therefore:

- To improve amenity and safety for pedestrians and cyclists;
- To enhance the permeability of the square;
- To promote a continuous and connected network of facilities for walking and cycling; and thereby
- To encourage walking and cycling for all trips.

Interventions Delivered

Initial plans to significantly reduce parking within the Square were strongly rejected by the local business community resulting in an amended design and delays in delivery. There were concerns that the proposed design, which redistributed a high proportion of the space to pedestrians, would impact on local business. Retaining car parking was viewed by most of the business community as a key priority.

“The traders are all up in arms about losing the parking spaces because they are in competition with the shopping centre and are already at a big disadvantage”

– *Commuter Focus Group, Dungarvan*

Therefore, while the final design did involve some reduction in car parking, this was much less than originally envisaged. As outlined earlier, the Square was redesigned using a shared space concept, with improved pedestrian crossing facilities and an enhanced public realm. The shared space concept is widely used in Europe but relatively new in Ireland. A key principle of shared space is to remove a degree of certainty from drivers, to help reduce speeds and encourage drivers and pedestrians to be mindful of each other. This was encompassed within the redesigned Grattan Square through the removal of signage, street markings and kerbs. The entire square was also repaved with local limestone. Additional public space has been introduced, particularly at the sunny north end of the square, with new trees, seating and an area for small events. Clutter has been reduced in this area through integrating cabinets into some of the new seating.

FIG 4.16.1: PICTURES OF TRAFFIC MANAGEMENT TREATMENTS TO GRATTAN SQUARE (BEFORE)



FIG 4.16.2: PICTURES OF TRAFFIC MANAGEMENT TREATMENTS TO GRATTAN SQUARE (AFTER)



FIG 4.17: FOOTFALL COUNT RESULTS ON A WEEKDAY IN DUNGARVAN, YOUGHAL AND CLONMEL

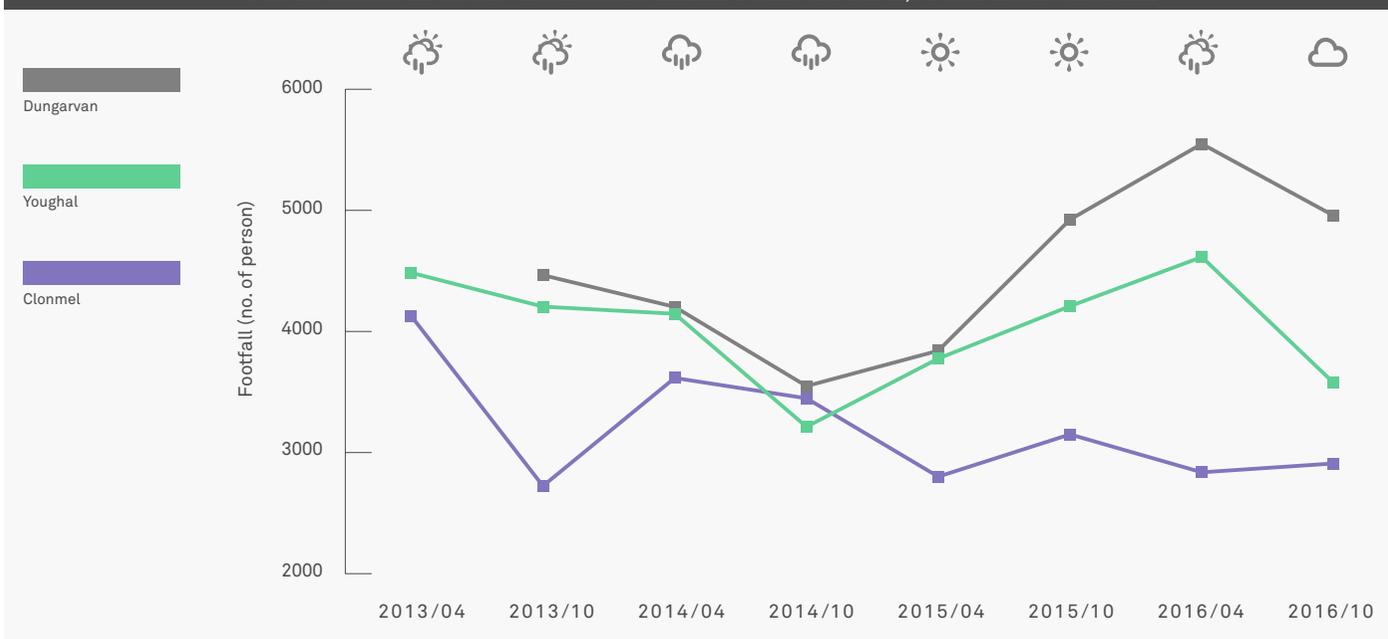
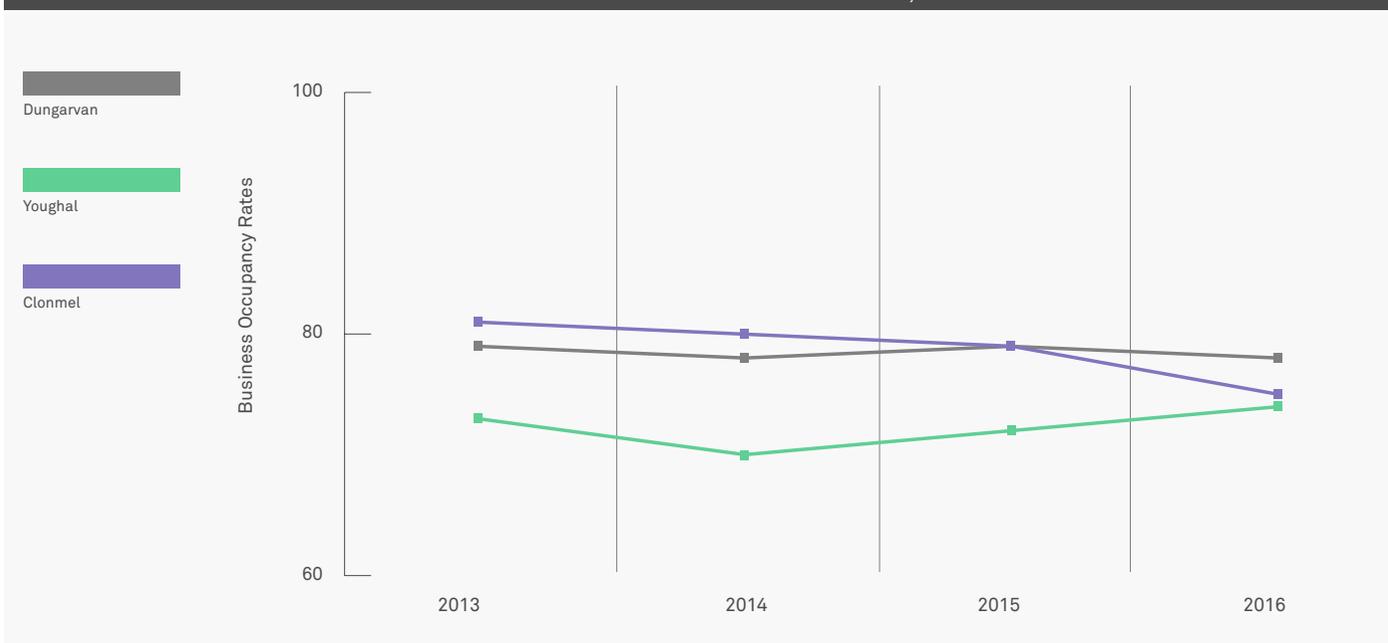


FIG 4.18: SUMMARY OF BUSINESS CENSUS RESULTS IN DUNGARVAN, YOUGHAL AND CLONMEL



Outcome of Grattan Square Redevelopment

There was no direct quantitative evidence available regarding the outcome of works on Grattan Square, partly because the scheme was only fully completed in early 2017 and also because there were no transport surveys undertaken in the locality.

Feedback from qualitative research participants indicated that there remained reservations about the shared space concept, particularly because the colour of paving used did not adequately differentiate the various user spaces.

“The Square is going to be much more dangerous for children and older people because the pedestrian crossings are really hard to identify because of the colours and they’re badly lit.”

– Parents Focus Group, Dungarvan

However, the redevelopment of the Square was considered by some residents to have been a success from the perspective of traffic calming and had improved perceptions of safety for those walking and cycling through it.

“I think it’s made driving and walking much safer. I think the traffic is much slower and much safer, that’s just my opinion because drivers have to slow down and take their time.”

— *Commuter Focus Group, Dungarvan*

These findings highlighted the mixed reaction to the works, and allow only a partial positive conclusion to be drawn regarding the scheme’s first two objectives. Furthermore, the lack of delivery for supporting on-road facilities for sustainable modes results in the Square remaining disconnected from the wider cycling and pedestrian networks. Although there was no evidence of the scheme’s contribution to the observed modal shift it is considered likely that the improvements will have contributed to the more positive perception of facilities and permeability in Dungarvan.

Contrary to the fears of local businesses in Dungarvan, outputs from the monitoring of the economic impact of Smarter Travel indicated that the redevelopment of Grattan Square did not impact footfall or business turnover. Footfall, shown in Figure 4.17, recorded in the town centre in April and October from 2013 to 2016 showed a substantial increase in Dungarvan. This is in contrast to the neighbouring comparator towns of Clonmel and Youghal, where reductions were recorded between October 2013 and October 2016. However, despite this positive trend, and a reported improvement in local business

sentiment in recent years, local businesses estimated that works in the Square resulted in a 40% decrease in turnover²³ during the period of construction works from January 2016 to February 2017.

Business occupancy rates in the town also remained static between 2013 and 2016, compared to a decrease in Clonmel and an increase in Youghal, as shown in Figure 4.18.

Lessons Learnt

The key lessons identified from the Grattan Square delivery were:

- Redevelopment of Grattan Square has on balance had a positive impact on perceptions of pedestrian and cyclist safety.
- The materials used for similar shared spaces should ideally provide a clearer differentiation of spaces to optimise actual and perceived safety of all road users.
- Early engagement with key stakeholders on major schemes is critical to achieving a shared vision for timely delivery.

²³ Source: Interview with the Dungarvan Chamber of Commerce, 2016.

SMARTER TRAVEL CENTRE

Intervention Objectives

A large number of employers in Dungarvan are small businesses that do not have facilities on-site to support walking and cycling to work such as showers and secure bike storage. The objectives of the Travel Centre were therefore:

- To provide shared facilities for business activities; and thereby
- To promote walking and cycling commuting.

Interventions Delivered

The concept for the Travel Centre was innovative and targeted a gap in end of trip facilities at small businesses within the town centre. Over €120,000 was invested in developing the Go Dungarvan Travel Centre. The Travel Centre provided male and female changing facilities, and secure cycle parking to encourage walking and cycling among commuters. The Travel Centre also included a meeting space which was designated for use by the Go Dungarvan team. This space was well designed to integrate with the theme of Smarter Travel.

Outcome of Travel Centre

Despite aspirations and marketing efforts of the Go Dungarvan team, feedback from users of the changing and parking facility indicated that it is used largely by local authority staff. Feedback from focus group participants also indicated that none had used the facility and most were unsure if it was available to the public. This evidence indicated that a lack of

targeted or clear communication and marketing undermined the ability of the Travel Centre to be utilised. The lack of direct workplace engagement as part of the behaviour change programme will also have contributed to the lower than anticipated uptake.

The meeting space had not been in use for the purpose of Smarter Travel since the Go Dungarvan team was dissolved at the end of 2015. Overall, there was no evidence that the Travel Centre had influenced either the perception/attitude of commuters or influenced their travel choices.

Lessons Learnt

The Smarter Travel Centre is a transferrable concept, however, the following lessons can be identified:

- It may be more suitable in bigger urban areas where there is a higher level of demand.
- Although the concept of the Smarter Travel Centre was innovative and the scheme targeted a specific segment of the community, the associated communication and marketing was not effective.

TRAFFIC AND PARKING MANAGEMENT

Intervention Objectives

Traffic reduction and traffic calming were at the top of the 'hierarchy of solutions' proposed by Go Dungarvan to encourage modal shift. The interventions had the following objectives:

- To reduce the volume and speed of vehicular traffic throughout Dungarvan;
- To create an environment more conducive to walking and cycling; and
- To promote more walking and cycling.

Interventions Delivered

Traffic calming was part of a number of schemes delivered within the town including Youghal Road, Monang Road, Cappoquin Road and the Gold Coast Road. Only one scheme explicitly targeted traffic reduction, which was the Fr Murphy Place Homezone. This scheme involved the provision of a formalised drop off zone and exclusion zone for Scoil Mhuire, Abbeyside, as well as four new pedestrian crossings, improved footpaths and lighting upgrades. The scheme improved access for pedestrian and cyclists from the 'The Track' to the school and the surrounding residential area.

Cycle parking was also provided as part of a number of traffic management schemes. Finally, €70,000 was invested in research to design a warning system at roundabouts which would alert drivers to the presence of cyclists; however, this scheme was not delivered.

Outcomes of Traffic and Parking Management

There was no evidence to directly link the improvements in traffic calming to the observed changes in resident attitudes or travel behaviour. Furthermore, there was no quantitative information available regarding the impact of the Home Zone. However, feedback from local residents through qualitative research was largely positive for pedestrians and cyclists. The scheme was perceived to have led to an increase in cycling and walking and improved the general aesthetic of the area. However, car drivers felt the scheme had made it more difficult to travel within the area.

“All of the pedestrian crossings are raised, so you have to slow down to go over them and they have got a few other speed ramps in the area, so you can't drive particularly fast around the school anyway”

– Residents Focus Group, Fr Murphy Place

“When you see families out walking and cycling it really does, it improves the whole place”

– Residents Focus Group, Fr Murphy Place

Despite the provision of increased bike parking, there was still a perceived lack of secure bike parking spaces in the town centre, which created a disincentive for people to cycle into the town. In contrast, car parking was perceived as very cheap and therefore an implicit encouragement to drive. Both situations were highlighted by focus group participants as being contrary to the overall objectives of Smarter Travel.

“I find if I bring a bike into town there's not a huge amount of places you can park it and lock it up if I was meeting a friend for coffee or something.”

–Image Focus Group, Dungarvan

Overall, there was no evidence within the evaluation that the traffic management interventions contributed directly to the observed change in mode share. However, the improvements made to the public realm and attempts to re-allocate road space from car to other, more sustainable, modes is likely to have contributed to the observed changes in resident attitudes and perceptions.

Lessons Learnt

The traffic management and calming interventions are all transferrable and scalable to other locations. However, the following lessons can be identified:

- The programme of traffic management and calming interventions implementation should be coordinated and aligned with the wider network of connected facilities for pedestrians and cyclists.



E- WORKING CENTRE

Intervention Objectives

The project was aimed at reducing the need to travel by providing a free work space for long distance commuters. The objectives were therefore:

- To provide shared facilities for business activities;
- To reduce the distance of commuting trips; and thereby
- To promote walking and cycling commuting.

Interventions Delivered

In recognition of the fact that a high proportion of the local Dungarvan community commute long distances to work, the Go Dungarvan team made a contribution of over €80,000 towards the development of an e-Working facility located in the town centre.



Outcome of the E-Working Centre

The impact of this innovative pilot was constrained by the fact that as the centre evolved it became more of a meeting room space for hire. The space does not provide a comfortable working environment suitable for use over extended periods. For example, only a limited number of small hot desks were made available and no ICT equipment such as external monitors and keyboards were provided. For these reasons, the e-working centre has not been successful in achieving its objectives, in particular the objective of reducing long distance commuting.

Lessons Learnt

The key lesson learnt from the delivery of the scheme was:

- To ensure that there was a clear definition of the scheme and its scope, to avoid the transition into a different offer i.e. from a hot desk environment to a meeting space.
- Speak to potential users in advance of development of similar centres to determine needs and potential for impact on modal shift.
- Consider ergonomic guidelines for desk based working when designing workstations.

4.4.3.1 Summary of Infrastructure Outcomes

There was evidence that some of the infrastructure delivered in Dungarvan had been well received by the local community. In particular, the greenways and the Home Zone had improved perceptions among residents of safety and attractiveness of walking and, especially, cycling, thereby contributing to modal shift for non-commuting trips. Indeed, the HTS results indicated that infrastructure investment had encouraged modal shift, with 13% of those who were walking more in 2016 doing so because of improved facilities and 41% of those who were cycling more doing so because of improved facilities.

Similarly, the investment at Grattan Square was considered likely to have influenced the improvement in perceptions of permeability and public realm in Dungarvan, but there was no evidence that this had transferred into an increase in walking and cycling to and through the town centre.

However, the evidence also supported the conclusion that for various reasons both the off-road and on-road infrastructure had contributed little to influencing the modal choice of commuters or escorted education trips. Specifically, investment in on-road infrastructure had not improved perceptions of safety, primarily due to the lack of connectivity and integration across the network. Other infrastructure measures delivered in Dungarvan that did not result in a positive impact on attitudes or modal shift included the Smarter Travel Centre, the e-Working Centre and research on roundabout safety.

Some of the main reasons that cycling in Dungarvan has not increased for work and escorted education trips include:

- Levels of cycling skill and confidence within the community are low and heavily influence perceptions of road safety. Of the adults who responded to the 2016 HTS, just 46% said they would be either 'very confident' or 'quite confident' riding a bicycle on roads shared with cars and other vehicles. This has a strong influence on modal choice, including school trips taken by children;
- Some of the key barriers to cycling in Dungarvan, such as large and busy roundabouts, were not addressed through the Go Dungarvan programme;
- Cycling was perceived by many as a leisure activity, mainly for the summer months while walking was perceived as a year-round leisure activity as demonstrated by the monthly profile of pedestrians and cyclists on the greenways; and
- End of trip facilities in workplaces and schools were still perceived as inadequate.

Changes in mode share are also closely linked with the Go Dungarvan behavioural change programme set out in the next section.

4.4.4 Behavioural Change Investment Outcomes

The primary focus of behavioural change investment in Dungarvan was to improve awareness of the benefits and image of Smarter Travel. Through this the main objective was to improve the attitudes of residents, increase cycling confidence and thereby encourage modal shift. As outlined in Section 4.4.2 the HTS demonstrated some significant improvements in attitudes between 2012 and 2016. This section considers the contribution of the behaviour change investment made by Go Dungarvan to attitudes and perceptions, and thereby their potential contribution to behaviour changes. The main components delivered to achieve these objectives were:

- School travel planning;
- Marketing campaign;
- Events;
- Adult cycle training; and
- Other.

Given the extent of investment in each of the above areas, and the prominence of data available, the review of school travel planning is the most extensive. The scope and outcomes of these measures are outlined below, presenting the following information:

- Intervention objectives;
- Interventions delivered;
- Outcomes and impacts, focusing on the contribution narrative; and
- Lessons learnt in terms of transferability and scalability.



SCHOOL TRAVEL PLANNING

Intervention Objectives

School travel makes up a high proportion of AM peak hour trips and therefore the Go Dungarvan delivery plan focused specifically on these trips through the behavioural change programme. The objectives were:

- To provide training to improve confidence and skills; and thereby
- To encourage a shift to walking and cycling to school.

Interventions Delivered

As part of the national Green Schools Programme,²⁴ an An Taisce travel officer was allocated to the Go Dungarvan project on a temporary basis and worked alongside the Go Dungarvan team and Waterford Sports Partnership staff on the delivery of the schools programme. The team engaged with all schools in Dungarvan, including four primary schools, four secondary schools and St. John's Special School, which caters for children aged 4 to 18 with special educational needs. The team coordinated the completion of school travel surveys, provided tailored support, information and resources to schools, organised town wide/multi-school events and competitions and assisted schools in planning and undertaking individual campaigns and events. A summary of the main interventions delivered is provided below.

Cycle Training

The provision of cycle training to primary and secondary school students was one of the best received aspects of Smarter Travel delivery in Dungarvan. At the time the Go Dungarvan programme was delivered, there was no agreed national standard for cycle skills training in Ireland.²⁵ Therefore, a bespoke cycle training programme was developed by Waterford Sports Partnership for delivery in Dungarvan to children aged 4-18. Balance bike training sessions were provided to infants and pre-schools, with balance bikes loaned to the schools by Go Dungarvan. Basic cycling skills training was delivered to six to nine year olds (Cycling Ireland Sprocket Rocket training), while training for older primary school children and for secondary school children incorporated on-road skills such as T junctions and roundabouts. Students completing a Post Leaving Certificate (PLC) course in sport, exercise and coaching were also trained as tutors to deliver cycle training in schools and teachers were trained to deliver the balance bike programme. While most cycle training was delivered to children only, some parent and child sessions were delivered. As in other areas, bike maintenance workshops were also delivered in secondary schools.

Social Cycles

To maximise cycling activity, Go Dungarvan supported St. Mary's NS in setting up a school bike fleet consisting of 30 reconditioned bikes. This was seen by school management as very beneficial, particularly for a school with a significant number of pupils from more



disadvantaged backgrounds (DEIS school²⁶). With supervision from the Go Dungarvan team, classes from the school began to cycle to matches to save the cost of hiring a bus and to improve cycling confidence. The school bike fleet is also used for cycle training and social cycles on the greenway, such as an annual cycling trip to Clonea Beach.

²⁴ The Green Schools programme is a national government funded programme which is implemented by the Environmental Education Unit of An Taisce. The programme has been introduced within more than 3,800 primary, secondary and special schools in Ireland. There are seven themes within the Green Schools programme, of which travel is one. The travel theme has been operating since 2008 and is delivered by Travel Education Officers who support schools in developing and delivering travel plans and actions.

²⁵ 'Cycle Right', the new National Standard for Cycle Training was rolled out nationally in 2017 and is produced and supported by DTTAS, the Road Safety Authority (RSA) and Cycling Ireland. Under the programme, cycle training in schools is part funded by DTTAS and the RSA.

²⁶ DEIS (Delivering Equality of Opportunity in Schools) schools are schools which are allocated additional resources by the Department of Education in recognition of the fact that they have a higher proportion of pupils from disadvantaged communities.

“Someone from Smarter Travel cycles with the children to matches and they also donated bikes and helmets to the school so anyone that doesn’t have a bike can still use one”

–Parents Focus Group, Dungarvan

Events and Challenges

Various events and challenges were organised in schools across the calendar in Dungarvan. Regular challenges included ‘Walk on Wednesday’ and ‘Cycle on Wednesday’. The Go School Smart Travel Challenge was organised for primary schools to encourage pupils to walk, cycle or car-share to school during the months of November and December. Prizes were awarded weekly to individuals in each class and to the winning class at the end of the challenge. Many other events were also delivered as part of the Go Dungarvan school project, with some examples including the Road Safety Week programme, ‘Beep Beep day’ for pre-school children and ‘Travel Days’ at specific schools.

CBS Transition Year Module

In the 2014/2015 school year, a full year (24 week, double class) module was delivered to all Transition year (4th year) students at Dungarvan CBS by the Go Dungarvan/An Taisce Travel Education Officer. The module included a wide range of workshops, with some examples

including: ‘the health benefits of smarter travel’; ‘travel survey design, delivery and analysis’ and ‘planning and land use zoning’.

Outcomes of School Travel Planning

The impact of the School Travel Planning Programme has been assessed through an analysis of Census data from 2011 and 2016 on pupils’ usual mode of travel to school, as well as through baseline and follow-up surveys within schools and qualitative research with parents and teachers.

Using the Census data, changes in mode share amongst school pupils resident in the Dungarvan STA can be compared against changes in the nearby towns of Youghal and Clonmel. In Dungarvan, there is some evidence of a modal shift to cycling at both primary (+2.7pp) and secondary (+4.6pp) level. This increase in cycling is not observed in the comparator towns. However, over the same period, walking mode share and public transport mode share amongst Dungarvan pupils each reduced at both primary and secondary level, while there was also a slight increase in car mode share at primary level (+0.8pp) and a larger increase at secondary level (+1.9pp). As such, the programme has not been successful at increasing the overall mode share of sustainable travel modes, despite the increase in cycling achieved.

School travel surveys which were undertaken at all participating primary and secondary schools provide a secondary source of data on modal shift. The results of the Census and the school travel surveys cannot be compared

TABLE 4.11: USUAL MODE OF TRAVEL TO PRIMARY SCHOOL (CENSUS 2011 – 2016)

	Dungarvan		Youghal		Clonmel	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	66%	0.8	73.5%	-0.5	71.4%	0.1
Walk	27%	-1.9	9.9%	-1.2	18.5%	-0.1
Cycle	4.5%	2.7	0.1%	0.1	0.8%	0.5
Bus/Rail	2.3%	-1.6	16.3%	1.6	9%	-0.5
Other	0.2%	0.1	0.2%	0.0	0.3%	0.1
Total (n)	1067		878		1630	

TABLE 4.12: USUAL MODE OF TRAVEL TO SECONDARY SCHOOL (CENSUS 2011 – 2016)

	Dungarvan		Youghal		Clonmel	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	56.8%	1.9	56.6%	-5.1	65.6%	5.6
Walk	31.6%	-2.2	26.5%	3.6	22.6%	-3.2
Cycle	8.7%	4.6	0.2%	-0.8	1.2%	-0.2
Bus/Rail	2.6%	-4.4	16.2%	1.7	10.3%	-2.0
Other	0.3%	0.1	0.5%	0.5	0.3%	-0.1
Total (n)	743		555		996	



directly due to the different timing of surveys and the different samples involved. Caution is generally advised when interpreting the results of self-reported surveys of children due to the possibility of response bias. In addition, for some schools there was some seasonal variation in the months when baseline and follow up surveys were undertaken, which may have had an impact on the results.

The results of the school travel surveys were largely positive at primary school level. The combined mode shares of car and 'Park and Stride' (PAS) decreased at four of the five primary schools by between 5pp and 18pp, while the combined mode shares of walking and cycling increased at three of the five primary schools. In contrast, the school travel surveys recorded relatively little positive change at secondary school level. The combined mode shares of car and PAS increased at three of the four secondary schools, while the combined mode shares of walking and cycling decreased at two secondary schools.

While the census results are the main source of evidence on school travel planning outcomes, qualitative and other evidence is valuable in understanding the factors which influenced or acted as a barrier to modal shift for the trip to school and also highlights additional positive outcomes of the schools programme. In particular, evidence from a range of sources suggests that the promotion of cycling as part of the schools programme influenced the increase in cycling mode share observed in the census. Primary school teachers interviewed by AECOM reported that cycle training had a positive impact on children's balance, confidence and social skills, as well as raising the profile of sustainable modes. Teachers also made the observation that many parents had purchased bikes for their children following cycle training and frequently used greenway facilities around Dungarvan for recreational trips as a result. This will have contributed to the increased mode share for cycling for leisure trips. Teachers valued cycle training as a 'skill for life' and something that the children would reap benefits from for many years.

"My son is nine and he cycles in front of me and he knows what to do and he's very confident. It gives them a great boost of confidence and they know road safety better than we do probably."

—Parents Focus Group, Dungarvan

On the basis of positive perceptions of cycle training, teachers interviewed recommended that cycle training should form part of the curriculum and ideally be provided free of charge. The current partial subsidy available for 'Cycle Right' (the new national standard for cycle training) is not perceived by teachers to be sufficient to ensure access, particularly in schools which have high numbers of pupils from disadvantaged communities. It was also suggested by teachers that cycle training should be offered in more than one school year to ensure competency is achieved before children leave primary school.

Research was conducted by the Waterford Institute of Technology on the impact of cycle training delivered in Dungarvan, with pre and post training surveys undertaken as well as follow-up surveys twelve months after training was completed.²⁷ The research found that cycle training had a positive effect on the skills, confidence, attitudes and travel behaviour of participants. For example, the proportion of female students who have 'ever' cycled to school increased by 63%, between pre and post cycle training surveys, compared to a 25% increase among female students in control schools that did not receive training. There was also a significant improvement in attitudes including a 39% reduction in the proportion of students who felt that traffic made them 'afraid of cycling' and a 49% increase in the proportion of students who felt confident 'cycling on big roads'. These results indicate that the cycle training provided in Dungarvan has contributed to achieving its objectives.

Unfortunately, there was no quantitative evidence available through which to assess the outcomes of the events and challenges delivered in schools. However, qualitative evidence suggested that they had raised the level awareness of alternative modes among parents. There was also evidence that structured encouragement forces parents to rethink modal choice because the preference among children, especially in primary school, is to cycle or walk to school. This was linked to initiatives such as 'Walk on Wednesday'.

"There's plenty of people who would never think of walking to school so if their child is saying they have to walk because it's Wednesday, it changes their behaviour even if it's only for one day."

—Parents Focus Group, Dungarvan

The qualitative research also identified a number of common barriers to achieving modal shift for the school trip which were not fully addressed by the Go Dungarvan programme. Safety was still the most critical factor raised by parents, with some cycle routes still considered too dangerous to allow children to use; this included accessing sections of The Track.

²⁷ The Impact of Cycling Skills Training on Cycling Confidence and Behaviour. Elaine Mullan and Peter Jones. WIT.

“I won’t let my daughter cycle because where we live you have to go on the N25 to get into town and it’s far too dangerous for a child to cycle on their own.”

–Parents Focus Group, Dungarvan

Heavy school bags and the need to carry additional bags such as sports gear were also of significant concern to parents. Although the Go Dungarvan project included an iPad based e-book pilot at one secondary school, this was never expanded beyond one participating class. Monitoring of the pilot demonstrated that students were more likely to walk and cycle to school if there was no need to carry heavy bags, with a 23% increase in walking and cycling among pilot participants. However, there was no possibility of extending the trial as the current curriculum is still heavily dependent on the use of text books. As such, a sustained change would not be possible without support from the Department of Education.

“Definitely if his bag was lighter I would make him cycle because I drive back home then cycle to work. I would love it if he could cycle but he physically can’t because his bags are too heavy”

–Parents Focus Group, Dungarvan

These barriers were combined with a tendency for some parents to feel guilty if they do not drive their children. Some parents highlighted that school engagement may need to focus more on changing parental attitudes rather than just the children themselves in order to overcome this.

“I feel like a bad person for the whole day if I make my daughter walk to school so maybe more work needs to be done on us. Maybe we need to get into the mindset of making them do it whether they feel like it or not.”

–Parents Focus Group, Dungarvan



Lessons Learnt

Feedback on the outcomes of school travel planning in Dungarvan was positive, especially considering the relatively limited investment required to maintain the programme. A similar approach could be transferable to most schools in Ireland. Lessons learnt from Dungarvan included:

- More ongoing engagement with schools on Smarter Travel is recommended on the basis of the positive feedback received, especially in areas of high traffic congestion/ traffic issues. The current arrangement means the two year ‘Travel Theme’ is delivered by An Taisce on a one-off basis only to support the schools in applying for a Green Flag.
- Teachers engaged in the evaluation have emphasised that, due to the limited internal resources available, ongoing external support was crucial to sustaining the implementation of smarter travel initiatives.
- The cost of bikes is a barrier to modal shift, especially within Deis schools. A donation of up-cycled bikes from Go Dungarvan helped tackle this issue in some Dungarvan schools.
- The biggest challenge experienced was changing the attitude of parents. It was recommended by teachers that the schools

programme should be amended to include more direct engagement with parents, where possible, to influence modal choice within the home.

- Practical measures like social cycles and cycle training have had a positive impact on attitudes, confidence and behaviour. Teachers have recommended that the recently introduced Cycle Right Scheme is reviewed to ensure more training resources are made available and that they are fully subsidised to ensure access for all students.
- Consideration could be given to running further e-book pilots, to reduce the weight of school bags, through a national initiative by the Department of Education, as it would not be possible to expand the programme on a local level.
- Initiatives to respond to the practical barriers to sustainable travel need to be identified at a local level and piloted to understand effectiveness prior to larger scale investment.

GO DUNGARVAN MARKETING CAMPAIGN

Intervention Objectives

The objectives of the marketing campaign delivered by Go Dungarvan were:

- To improve awareness of Smarter Travel and its benefits; and
- To improve the overall image of walking and cycling.

Interventions Delivered

There was a range of media used as part of the Go Dungarvan programme, including a website, radio coverage, a quarterly newsletter and a Facebook page. A 'Dungarvan Local Guide' was also produced by the Go Dungarvan team in 2014 which consisted of a map of the town showing cycle infrastructure, safe crossings and key destinations.

Outcomes of the Marketing Campaign

There was no quantitative evidence to directly link the outcomes of marketing investment to the observed modal shift. However, influencing residents' awareness of sustainable transport modes is a critical first step in behavioural change. Data from the HTS indicated that attitudes in relation to investment in walking and cycling had become more positive, possibly in response to increased awareness of Smarter Travel and its benefits. For example, 93% of HTS respondents (+6.8pp since 2012) agreed that 'more people should be encouraged to walk/cycle' for the sake of the environment

compared to 88% of respondents in the national attitudinal control survey (no change since 2012).

At the outset of programme delivery, and as reported in the Interim Evaluation Report, qualitative research identified stigma associated with walking and cycling to work and school in Dungarvan. However, more recent community involvement suggested this stigma had dissipated, with walking and cycling now being more accepted as travel modes in the town.

"I cycle for leisure and also to work and some of my colleagues are the same. It's just the norm now, we tend to cycle. I think in Dungarvan the town has gone beyond cycling stereotypes, the image of Mr Lycra doesn't exist anymore because everyone cycles."

– Image Focus Group, Dungarvan

"I think Dungarvan would have a reputation as being an active town, people walk and run and cycle and it has definitely increased over the last two or three years."

– Parents Focus Group, Dungarvan

It is likely that the marketing activities will have contributed to this positive change in the perception of sustainable modes, which in turn will have placed them higher on resident's mode choice priorities.

Lessons Learnt

The key lessons learnt through the marketing activities in Go Dungarvan were:

- There needs to be a consistent brand and message adopted; and
- Marketing should be targeted to specific groups and tied into other investment to assist in promoting and then sustaining behaviour change.



EVENTS

Intervention Objectives

The objectives of the events delivered by Go Dungarvan were:

- To improve awareness of Smarter Travel and its benefits; and
- To improve the overall image of walking and cycling.

Interventions Delivered

As outlined previously, the programme of events undertaken as part of the Go Dungarvan programme was built on existing town-wide activities. These included existing non-STA programme events and competitions, which were used to raise the profile of Smarter Travel and the Go Dungarvan brand. The team focused mainly on collaborating with existing annual events, such as:

- The St. Patrick's Day Parade;
- The Sean Kelly cycling sporting event;
- The Waterford Festival of Food;
- 'Dungarvan Aglow' (turning on of Christmas lights); and
- The John Treacy 10km run.

A varied programme of events was also organised during National Bike Week each year, and the National Childminding Week also provided a focus for initiatives targeted at pre-school age groups.

Outcomes of Events

In 2014, 16% of HTS respondents indicated that they had attended a Smarter Travel event in the previous twelve months. This reduced to 10% in 2016, a reflection of the reduced resources working on the behavioural change element of the programme in the latter part of the period. However, these levels of attendance are a positive indication of community involvement in the programme as well the potential for events to increase awareness of Smarter Travel. The use of events to promote sustainable modes will also have influenced the profile of walking and cycling as activities in their own right, as well as active modes of travel. These factors are considered likely to have contributed to the positive change in attitudes amongst residents, and thereby in the behaviour for non-commuting trips.



Lessons Learnt

The key lesson learnt through the event activities in Go Dungarvan was:

- Events delivered in Dungarvan did not clearly communicate the commuting objectives of Smarter Travel. Many focus group participants were of the view that the objective of events being held was to encourage leisure walking/cycling. Heavy promotion of leisure cycling events, such as the Sean Kelly 'Tour of Waterford', compounded this view.
- Events present a cost effective means of increasing awareness and involvement in Smarter Travel but need to be clearly focused.



ADULT CYCLE TRAINING

Intervention Objectives

The objectives of the cycle training delivered by Go Dungarvan were:

- To improve the confidence and cycling skills of adults; and thereby
- To encourage a shift to walking and cycling.

Interventions Delivered

Go Dungarvan offered adult cycle training. However, it proved very difficult to encourage participation as cycle training was seen by residents to be more associated with the act of cycling as opposed to improving confidence. Despite rebranding to emphasise this objective, there was limited success in increasing participation.

Outcomes of Cycle Training

Evidence from the Community Cycle Audits, previously referenced, demonstrated that the level of cycling confidence among adults in Dungarvan was low. Less than half of HTS respondents (46%) felt confident enough to cycle on-road with traffic. The risks of cycling were viewed as excessive and therefore cycling was perceived as an unattractive travel option for many. Despite this, the Community Cycling Audits demonstrated that even the most subtle advice and tuition on cycling on-road can improve confidence. The low level of take-up of adult cycle training indicated that the intervention would have made little contribution to the behaviour changes observed between 2012 and 2016.

Lessons Learnt

The key lesson learnt through the delivery of adult cycling training in Go Dungarvan was:

- An alternative means of making adult cycle training available to adults is required, possibly through the workplace travel programme;
- Providing cycle training in schools is possibly the easiest way of improving cycling skills within the community.
- The marketing and branding of training needs to promote the wider benefits of cycling and the need to improve confidence and skills.



OTHER INITIATIVES

4.4.4.1 Summary of Behavioural Change Outcomes

A number of additional innovative behavioural change projects were delivered in Dungarvan, such as the use of Champions and the GP referral scheme. The impact of use of Champions is unclear but likely to be minimal as they were involved in the Programme only for a limited period. The impact of investment made in the GP Referral Scheme wasn't monitored due to the need to maintain patient confidentiality.

There is qualitative evidence of positive perceptions of school travel planning and school travel planning activities are likely to have contributed to the modal shift observed for school trips through the HTS and particularly to the increase in cycling mode share observed in the Census. There was also evidence that school travel planning has impacted on parental attitudes, influencing their decision making due to pressures from children, resulting in an increase in walking and cycling with children for leisure purposes. The evaluation of school travel planning in Dungarvan demonstrated that although safer infrastructure is critical to influencing parental attitudes to school travel, behavioural change investment is perhaps equally as beneficial.

Other behavioural change measures delivered in Dungarvan, such as the distribution of newsletters, have had a positive impact on the awareness and image of Smarter Travel. However, the Dungarvan experience demonstrates the need for more tailored messaging around active travel for commuting and perhaps more targeted marketing to specific parts of the community who may be more receptive to modal shift.



4.5 Conclusion: Impact of Smarter Travel in Dungarvan

Evaluation of the Go Dungarvan programme has demonstrated that modal shift observed, mainly for escorted education trips and non-commuting trips, has been impacted by Smarter Travel investment in both infrastructure and behavioural change measures. A summary of modal shift at a trip level and the key factors contributing to change are summarised in Table 4.13. The Logic Map shown in Figure 4.19 provides a summary of programme delivery in Dungarvan; only programme measures which have been fully delivered are included in the map.

Relatively high unemployment and a relatively high proportion of HTS respondents within the lowest social group 'E' has impacted the programme level modal shift in Dungarvan. Group E respondents demonstrated the highest decrease in car mode share (-18.9pp) and the highest increase in walking (+16.3pp). A small proportion of respondents changed travel patterns to save money or had no option as a result of no longer having access to a car.

Despite the fact that almost 40% of employment trips in Dungarvan are less than 4km in distance, there was very limited change in walking and cycling mode share for these trips. There was no investment in behavioural change measures targeted at employment trips and therefore the only outputs influencing these trips was infrastructure and community level awareness measures (such as marketing and events).

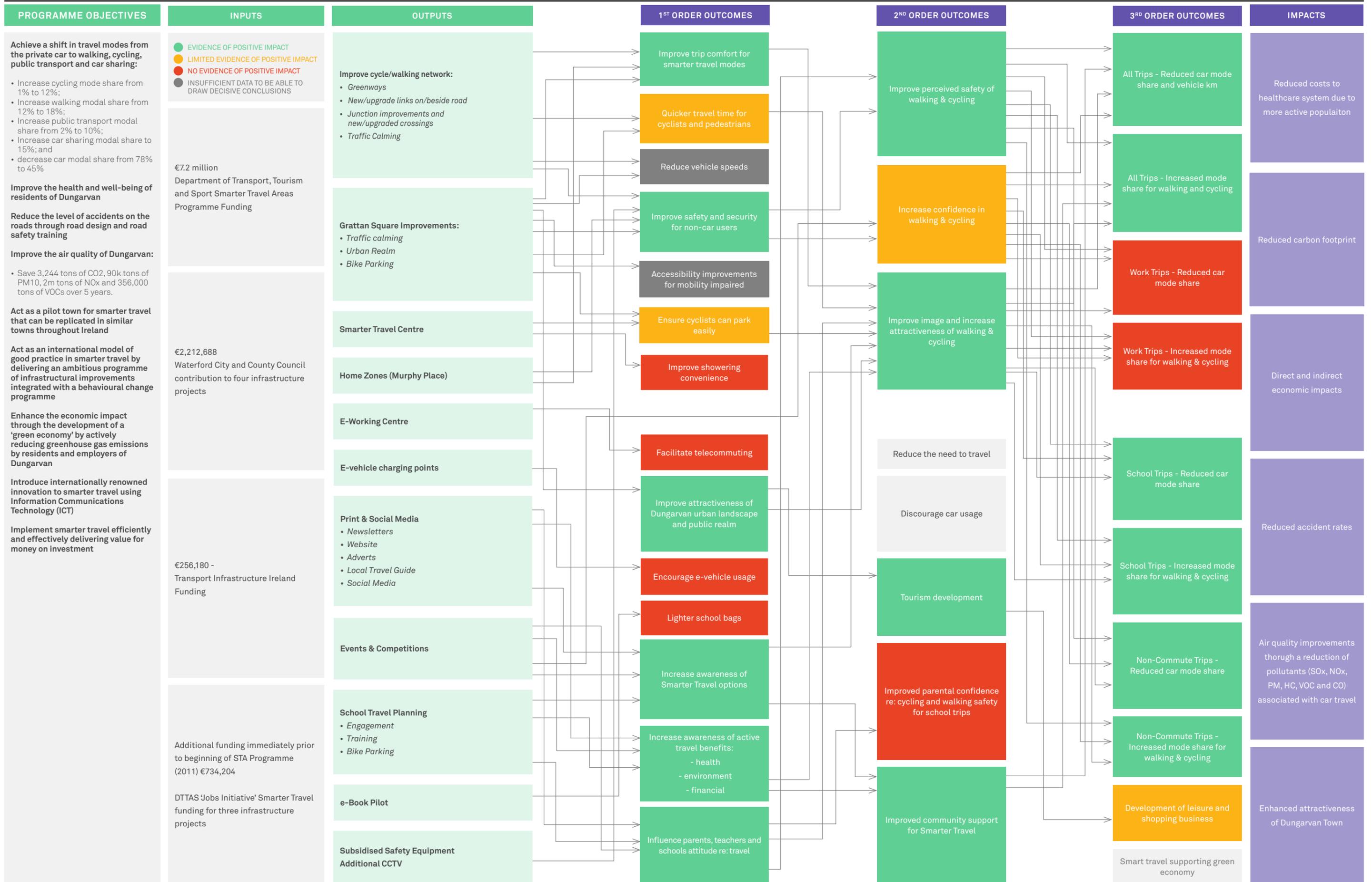
Changes in escorted education trips have been impacted by investment in behavioural change measures in schools, while investment in infrastructure on school routes is also assumed to have played a role. Changes in walking for escorted education trips were also likely to have been influenced by socio-economic factors. Higher unemployment rates in Dungarvan (11%) compared to the control (6%) and other STAs is likely to have influenced car use during the evaluation period.

Non-commuting trips have been impacted by improved perceptions of the safety and attractiveness of walking and cycling, largely on the greenways. The investment in infrastructure, particularly greenways and cycle tracks, were the main contributory factors, which in turn resulted in modal shift. There is also evidence that behavioural change measures delivered in schools have influenced modal shift for non-commuting trips. Initiatives in schools (such as cycle training and social cycles) have improved the image of Smarter Travel and encouraged modal shift for trips to school as well as increased walking and cycling for leisure.

TABLE 4.13: SUMMARY OF MODAL SHIFT IN DUNGARVAN AND KEY CONTRIBUTING FACTORS

Trip Type	Gross Modal Shift 2012–2016	Contributing Factors
All Trips	Car: -7.4pp to 72.0% Walking: +5.6pp to 20.3% Cycling: +0.9pp to 3.6%	Improvements in infrastructure a key driver for change. Behavioural change measures in schools have directly impacted modal shift. Reduced car use among socio-economic group 'E' a contributing factor.
Work	Car: -5.2pp to 82.8% Walking: +1.7pp to 9.3% Cycling: +0.1pp to 2.3%	Limited evidence of change. Reduction in car mode share as a result of an increase in 'Other' modes such as Lorry/Van/Taxi. No specific behavioural change measures targeted at work trips.
Escorted education	Car: -10.1pp to 72.0% Walking: +9.9pp to 20.3% Cycling: No trips recorded	Increase in walking mode share for escorted education trips linked to both behavioural change measures delivered in schools and improved infrastructure, as well as increase in walking mode share among respondents in socio-economic group 'E'. However, Census results for all education trips indicate a much lower level of change for all education trips but show an increase in cycling.
Non-Commuting	Car: -6.4pp to 72.0% Walking: +6pp to 24.7% Cycling: +0.6pp to 4.2%	Improvements in infrastructure a key driver for change. Infrastructure investment has made walking and cycling more attractive for short shopping, visiting and recreational trips within the town. This is linked to improved perceptions of the safety of these modes, especially on greenways. Behavioural change measures in schools have also influenced modal shift for non-commuting trips. High awareness of Smarter Travel, and benefits, may also have influenced change.

FIG 4.19: LOGIC MAP SUMMARY OF THE IMPACT OF THE SCHEMES FULLY DELIVERED THROUGH THE GO DUNGARVAN SMARTER TRAVEL PROGRAMME

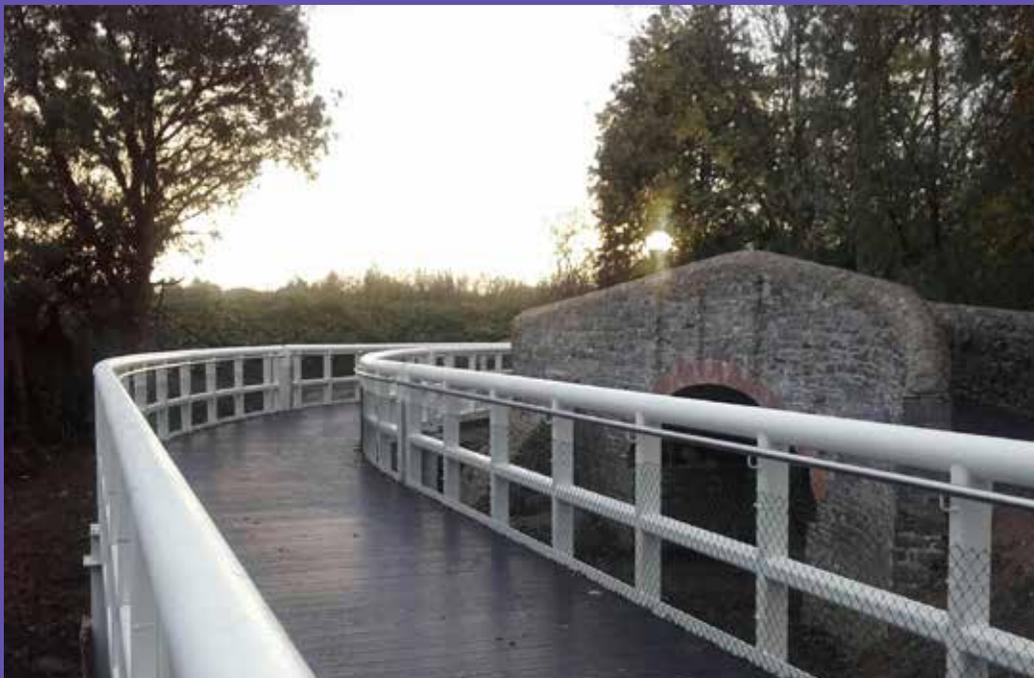


5



Limerick

5.0 Summary of Smarter Travel Delivery in Limerick



Inputs and Outputs

- The Limerick Smarter Travel (LST) bid was valued at €11.30m and the DTTAS Smarter Travel funding of €9m was awarded in 2012.
- An additional €1.30m was invested in LST projects since 2012. The total Smarter Travel spend in Limerick was €10.30m.
- More than three quarters (77%, €7,923,009) of Smarter Travel funding was invested in infrastructure projects and the remaining 23% (€2,373,037) was invested in behavioural change measures and other project costs such as salaries.
- Over 9km of walking and cycling infrastructure was delivered which was heavily concentrated on the greenways linking the city centre and the University of Limerick (UL), and on walking and cycling facilities in the Castletroy area. Additional funding was invested in junction upgrades and traffic calming (incl. over 3.6km of traffic calmed/upgraded links for walking and cycling in Castletroy and Rhebogoe), as well as in bike parking.

- Limerick invested more, proportionately, on behavioural change measures than Dungarvan and Westport. Investment was heavily concentrated on schools, workplaces and third level campuses. An annual programme of events was delivered in addition to challenges and a print and social media campaign.

Management of Delivery

- Governance of the LST programme changed within twelve months of commencement with Limerick City and County Council taking over the management role from UL. This may have impacted delivery timeframes.
- A designated team was put in place to manage the project with a broad mix of engineering and behavioural change experience.
- Some of the Smarter Travel team has been retained by LCCC to continue work on Smarter Travel delivery.

Delivery Against Plan

- The Regeneration Hub was omitted from the delivery plan due to delays on the wider regeneration plan for Southill. Therefore, LST was focused only on the three hubs of UL, Corbally and the city centre.
- The expenditure split for infrastructure and behavioural change was well managed and stayed reasonably close to plan.
- Infrastructure delivered is less extensive than planned with some key radials and city centre work omitted.
- The extent of both school and workplace travel planning delivered was slightly less than anticipated. A number of additional behavioural change measures were not delivered including personalised travel planning and station travel planning.

Programme Outcomes

- Modal shift targets set for the programme were overly ambitious and therefore cannot be used to measure progress.
- The HTS results show slight but positive impacts on modal shift which are higher than changes experienced within the control sample.
- Car mode share for all trips reduced by -2.7pp to 64% in 2016 with an increase of +4.1pp in walking and +0.9pp in cycling. Changes were observed across all trip types including employment trips, escorted education and non-commuting trips.
- The socio-economic group 'E' was most open to modal shift demonstrating a -8.1pp reduction in all car trips with a 9.7pp increase in walking trips.

Impact Attribution

- Longer travel distances in Limerick for both employment and education trips means that walking and cycling are often impractical.
- There is evidence that both infrastructure and behavioural change measures have impacted modal shift observed in Limerick and especially in the Castletroy area.
- Improvements in infrastructure have improved perceptions of safety, trip comfort and the image of Smarter Travel contributing to modal shift.
- Initiatives in schools, workplaces and campuses have improved the image of Smarter Travel and encouraged modal shift.



5.1 Overview



Limerick City has a population of just over 94,000²⁸, and the wider Limerick County region has a population of almost 192,000. It is Ireland's third largest city and acts as the capital of the mid-west, with more than half a million people living within an hour's drive of the city. Six major roads converge on the city, while frequent bus and rail services and an international airport at Shannon provide strategic connections. The city is located on the River Shannon, with four main crossing points near the city centre and a largely flat topography ideal for walking and cycling. Within the city, the road network enables relatively quick commute times, with usual journey times of less than thirty minutes reported by over 70% of residents of Limerick City and Suburbs in Census 2016. Befitting its size and regional status, Limerick has considerable commercial, administrative and cultural capital, with a number of significant multinational companies from ICT, life sciences, engineering and content, consumer and business Services sectors located in or near the city. Companies include Johnson & Johnson, Zimmer, Stryker and Cook Medical, Dell, Analog Devices, Intel and transportation firm Uber.

Limerick was selected as Ireland's Smarter Travel 'Demonstration City'; the LST area stretched from Limerick City Centre to Castletroy in the east to Corbally in the north, and included the regeneration areas of Southill, Singland and Ballysimon to the south.

The main focus of the LST programme was to improve accessibility between four key 'hubs' of the Smarter Travel Area (STA). Each of the hubs displayed different transport characteristics and had different demographics, as follows:

- **City Centre Hub:** The main focus of Limerick City's tourist attractions, service and retail industries. Along with a dense working population, the area also included a significant residential population;
- **Corbally Hub:** A major residential suburb of Limerick City located north of the City Centre, with higher levels of car ownership (86% of households²⁹) and car dependency for trips to work and education;
- **Castletroy Super-Hub:** This super-hub was made up three major trip generators in the area including:
 - *University of Limerick (UL) – 12,000 student population and key target area;*
 - *National Technology Park – major employment zone; and*
 - *Castletroy Residential – comparatively affluent residential area.*

²⁸ Population figure given for Limerick City and suburbs, Census 2016, Central Statistics Office

²⁹ Note that this car ownership data is from Census 2006, as presented in the LST funding bid.

- **Regeneration Hub:** This hub centred around Southill, is a regeneration area consisting of four housing estates with approximately 1,110 households. Southill was one of four areas which were the focus of an extensive regeneration project launched in 2005. While some aspects of the regeneration project have progressed, much of the housing regeneration proposed in Southill was put on hold during the recession and has yet to recommence. Car ownership in Southill was 41% in 2006.
- **Castletroy:** Significantly reduce the proportion of car trips made in the area, especially short journeys, and encourage a shift to walking and cycling by reducing car mode share from 41% to 23%. At the National Technology Park, also within the Castletroy area, the key aim was to encourage walking and cycling for shorter trips with the mode share for walking increasing from 14% to 30% and cycling from 1% to 11%; and

The overarching aim of the LST programme was to:

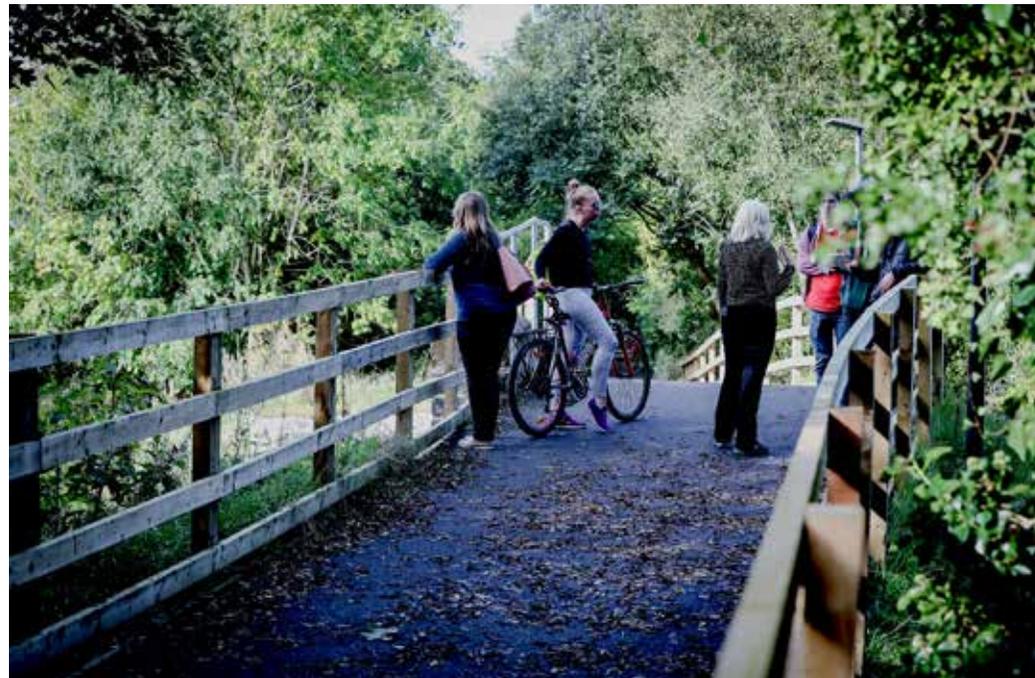
“create an exemplar smarter travel community that promotes enhanced connectivity and quality of life for all through the best utilisation of sustainable transport opportunities”.

The LST funding bid set out specific modal shift aspirations for each of the four ‘hub’ areas, as follows:

- **City Centre:** Improve cycling safety in the city centre and increase the cycling mode share by a factor of 5;
- **Corbally:** Reduce short car journeys and encourage a shift to walking and cycling. Car driver mode share was targeted to reduce from 44% to 28%;

- **Regeneration Hub:** Dissuade people from becoming aspiring car owners and show that smarter travel is a cheap, comfortable and healthy alternative to the car. The target was that 74% of trips to work and education from this area would be made by sustainable modes.

The following sections present details of the financial inputs, outputs delivered and outcomes achieved. The contribution of the various infrastructure and behaviour change measures to the observed change in mode share is also presented.



5.2 Programme Inputs

Limerick City and County Councils (LCCC) proposed a Smarter Travel bid worth €11.30m in 2010, which included both infrastructure and behavioural change measures. However, funding of €9m was announced in 2012 and a revised delivery plan was developed to reflect the reduced funding. The main deviation from the original delivery plan was that infrastructure measures proposed for the Regeneration Hub were postponed due to delays with the wider regeneration programme. As a result, the LST project only focused on the three hubs of Castletroy, Corbally and the city centre.

In addition to the DTTAS STA funding, further funding was made available from a range of sources, including:

- €851,678 of match funding was provided by UL for infrastructural investment in Smarter Travel on campus;
- Bike Week events in Limerick between 2013 and 2017 were allocated funding of €93,000 by DTTAS;
- €258,369 (the majority of which consists of staff costs) has been budgeted by LCCC in 2017 to continue work on Limerick Smarter Travel, following on from the STA programme; and

- Additional funding of €93,000 was allocated by the DTTAS for works on Route 4 in 2017/2018.

In total, €1,296,047 was invested from non-STA sources, making a combined investment in LST of €10,296,047. 77% (€7,923,009) of the total funding was invested in infrastructure projects and the remaining 23% (€2,373,037) was invested on behavioural change measures and other project costs such as salaries. In addition, investment was made in other areas of sustainable transport, but which were not classified as being part of the STA programme. As such, these measures were considered as alternative explanations for observed behaviour and attitudinal change. These included:

- A bike sharing scheme was launched in Limerick during STA programme delivery and was funded by the National Transport Authority (NTA) and Coca-Cola. As part of the five year sponsorship deal with Coca-Cola the scheme has to date been known as the Coca-Cola Zero Bikes. The scheme had 215 bikes at 23 stations at the time of writing, mainly within the city centre;
- The redevelopment of Colbert Station (Phase 1) was allocated €2.5 million funding from the NTA under the Regional Cities Programme. A new pedestrian plaza was developed, which included seating and new

bicycle parking. However, Phase 1 was only the first phase of a more significant €17 million plan for the redevelopment of the station which is awaiting funding; and

- €84,500 was allocated by LCCC for the maintenance of walking and cycling routes between 2015 and 2017. This funding was classified as part of the normal ongoing maintenance of the network and therefore not part of the STA programme.



5.2.1 Management of Delivery

Governance of the LST programme was originally planned under a combined team of LCCC and the University of Limerick, with the project being managed by the latter. However, the proposed team structure changed within twelve months of delivery commencing, with management of the programme reverting to LCCC.

A designated team was established to manage and deliver the programme. The team had a broad blend of skills and experience of relevance to all aspects of the programme. Four staff from the original LST team were retained by LCCC on temporary contracts, following closeout of the LST programme.

A key observation of the LST team is that Smarter Travel had become well integrated across other council departments. For example, LCCC now requests planning applications over a certain size to be reviewed by the LST team in relation to travel impacts. In addition, Smarter Travel has been incorporated within a range of other council initiatives such as the Limerick Urban Centre Revitalisation Project and the Colbert Station Upgrade.

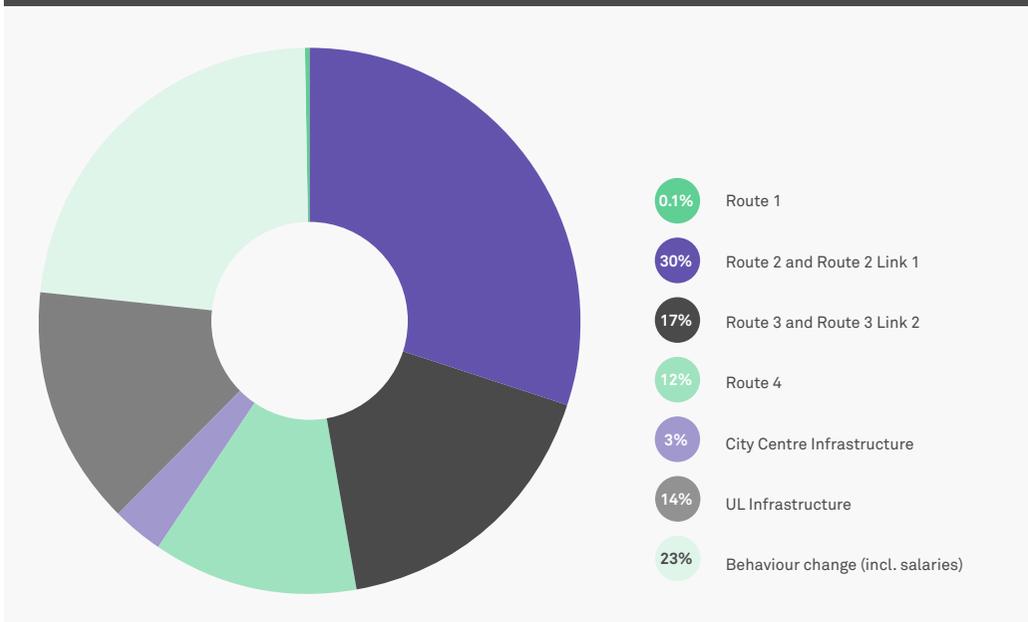
Programme delivery in Limerick was also impacted by amalgamation of the city and county councils in 2014. Elected city council members who had given commitment to delivery of the Smarter Travel bid were no longer able to support various proposals of the plan during implementation and the programme often failed to gain the support of county councillors.

5.3 Programme Outputs

To meet the defined targets and deliver enhanced connectivity, the LST bid proposed a comprehensive package of infrastructure and behavioural change measures. A breakdown of how the LST funding was invested is shown in Figure 5.1. This breakdown includes both DTTAS and additional funding, such as that received from LCCC and UL. The following sections provide a more detailed overview of the investment.



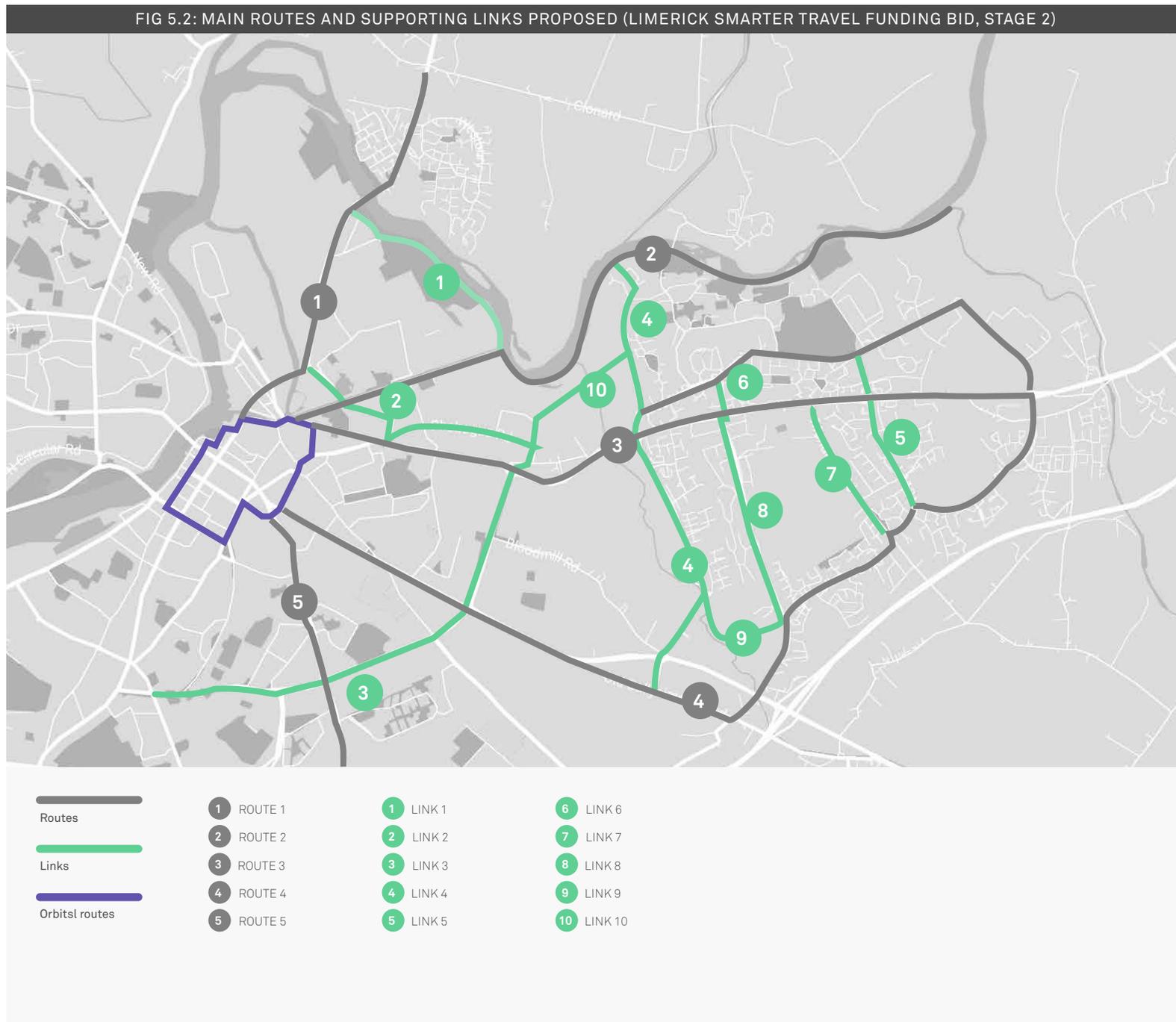
FIGURE 5.1: LIMERICK SMARTER TRAVEL INVESTMENT 2012-2017



5.3.1 Infrastructure Measures

An integrated network of cycle lanes and pedestrian links was proposed in the original LST bid, as shown in Figure 5.2, consisting of five main routes and ten supporting links. The plan was proposed as a blueprint for future development and not all elements were intended for delivery through the STA programme; in particular, Route 1 and Route 5, which were both described as 'longer term' proposals. Other proposals to improve cycling safety included traffic speed reduction, driver feedback signage and junction treatments. Supporting infrastructure measures proposed included cycle parking, pool bikes and public hire bikes and bike racks on local bus services.

Delivery of infrastructure as part of the STA programme has concentrated mainly on the Castletroy area and on the Shannon Banks greenway scheme. Work on a 1.5km section of Route 4 on the Old Tipperary Road/Old Ballysimon Road was also ongoing at the time of reporting in early 2018.



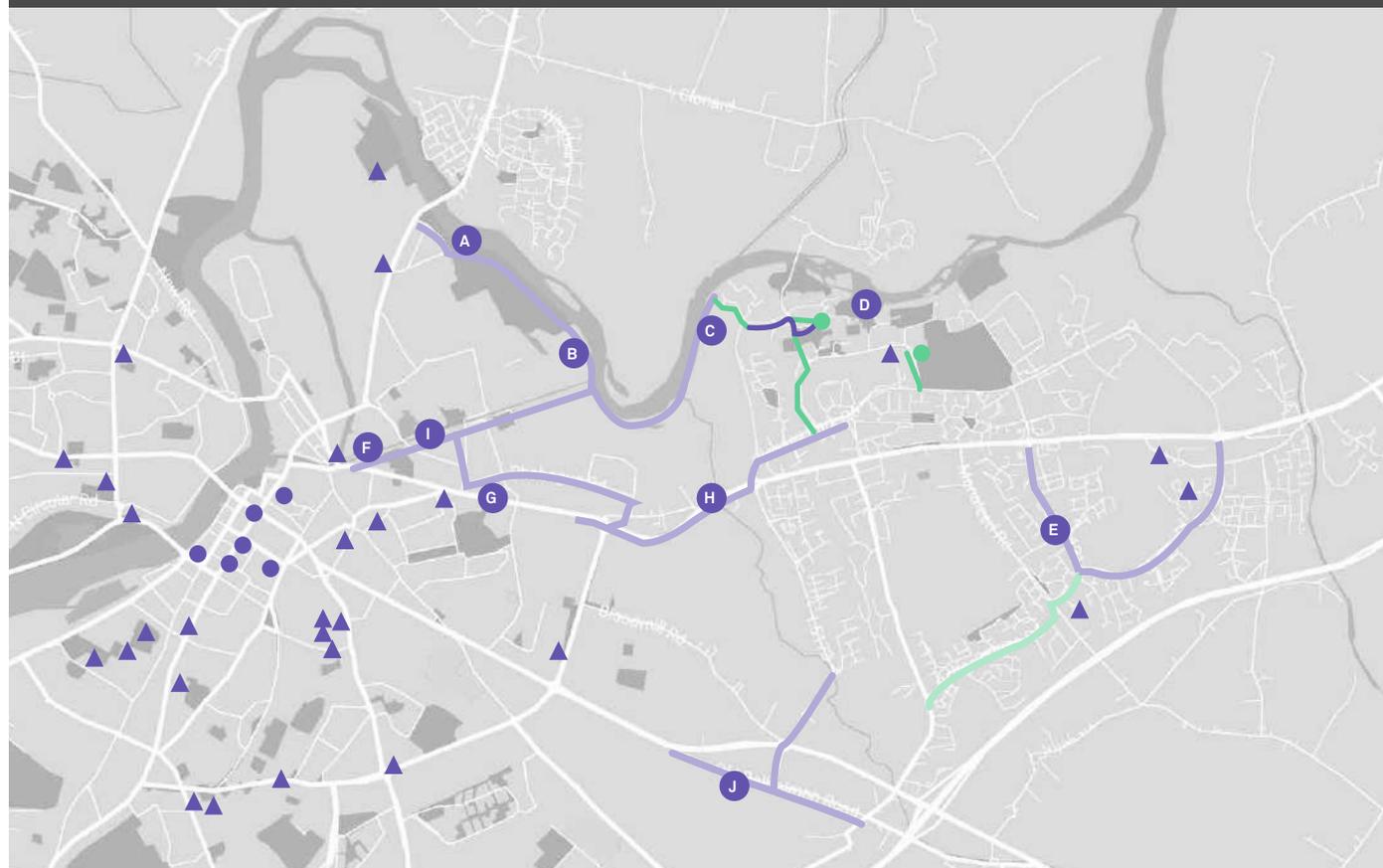
Over 9km of walking and cycling infrastructure was delivered within the LST area, as well as traffic calming and junction improvements (incl. over 3.6km of traffic calmed/upgraded links for walking and cycling in Castletroy and Rhebogue), new crossings and new bike parking. Geographically, a large proportion of investment was concentrated in the Castletroy area and along the Shannon Banks as shown in Figure 5.3 (the as delivered infrastructure). More detail on each of the schemes delivered is provided in Table 5.1.

Other key improvements delivered included: a two-way cycle path between UL and the Parkway Roundabout along Plassey Park Road; the R445 and the Dublin Road (part of the planned Route 3); new pedestrian and cycle paths on the UL campus; and a significant number of junction improvements in the Castletroy area to address safety for cyclists and pedestrians. Supporting infrastructure measures delivered have included the provision of additional cycle parking in the city centre, at UL and a number of other locations and the provision of new shower facilities at UL.

As with Dungarvan, overall infrastructure delivery to date in Limerick has been less extensive than anticipated, particularly the delivery of infrastructure along main roads. However, this is linked to the fact that delivery of many route sections as originally outlined in the bid was dependent on funding from sources other than the STA programme, which at the time the bid was submitted was anticipated to be in excess of €50m during the STA programme period. Although funding for most other

TABLE 5.1: LIMERICK SMARTER TRAVEL INFRASTRUCTURE MEASURES				
Project	Description	Length	Cost	
Route 2 and Links	Route 2, Link 1 (Shannon Fields, Phase 1 and 2)	1.6km	€3,102,712	
	Route 2 (Section 1), Rhebogue to UL	Upgraded shared walking and cycling path		1.8km
	Route 2 (Section 2), Lelia St. to Guinness Bridge			1.3km
	Route 2 (Section 3), Park Bridge Area	Traffic management, shared surface		400mm
Route 3 and Links	Route 3 Link 2 Rhebogue Road	Traffic calming (raised tables and junction treatments), new and upgraded footpaths, lighting upgrades	€1,736,021	
	Route 3 Phase 1 UL R445	Upgrade existing segregated cycle and pedestrian paths (700m), new shared cycle/pedestrian path (300m), junction upgrade		1km
Route 4	Route 4, Castletroy College Road and Castletroy-Kilmurry Link Road	Junction upgrades - Raised tables at 10 T-junctions and two redesigned roundabouts	€1,303,920	
	Route 4, Old Tipperary Road and Garryglass Road	Footpath improvements, cycle lanes, two Toucan crossings and three uncontrolled crossing points, raised tables, lighting upgrades		1.5km
City Centre	City Centre	Junction upgrades, new bike parking	€305,536	
UL	UL	New pedestrian and cycle paths, new bike parking and shower facilities	€611,079 (Plus €851,678 match funding by UL)	
Route 1	Corbally to City Centre	Investment relates to some initial planning work only, route delivery postponed until after STA programme.	€12,063	
Total Infrastructure Spending (incl. UL match funding for infrastructure)			€7,923,009	

FIG 5.3: LIMERICK SMARTER TRAVEL INFRASTRUCTURE INVESTMENT 2012-2017



- | | | | |
|---|---------------------|---|--|
| ▲ | LST SCHOOLS | A | ROUTE 2 / SHANNON FIELDS (LINK 1 PHASE 1) |
| ● | BIKE PARKING | B | ROUTE 2 / SHANNON FIELDS (LINK 1 PHASE 2) |
| ● | UI BIKE PARKING | C | ROUTE 2 / GUINNESS BRIDGE TO UL BOAT CLUB |
| — | UL COMPLETED ROUTES | D | UNIVERSITY OF LIMERICK SMARTER TRAVEL INFRASTRUCTURE |
| — | UL EXISTING ROUTES | E | ROUTE 4 CASTLETROY / NEWTOWN |
| — | PART 8 GRANTED | F | ROUTE 2 LEILA ST TO GUINNESS BRIDGE |
| — | COMPLETED ROUTES | G | RHEBOGUE NEIGHBOURHOOD GREENWAY |
| | | H | ROUTE 3 CITY CENTRE TO UNIVERSITY OF LIMERICK |
| | | I | ROUTE 2 PARK BRIDGE |
| | | J | ROUTE 4 L1171 OLD TIPPERARY ROAD PART 8 |

elements of the overall plan has not yet been made available, work was ongoing in this regard at the time of reporting. For example, a study being undertaken in early 2018 will identify detailed options for improving provision for sustainable modes along the City Centre to UL Corridor (Route 3) and between Ballysimon and the City Centre (Route 4) and this is expected to enable delivery of the sections of Route 3 and Route 4 where works have not undertaken as part of the STA programme.

Limited infrastructure improvements have been made to date in the city centre. Good quality bike parking was delivered but was less than planned. However, the Limerick Urban Centre Revitalisation Project (LUCROC) which has been allocated European Regional Development Funding is ongoing and when delivered this scheme will significantly improve the public realm and prioritise sustainable modes of transport on O'Connell Street, the main thoroughfare within the city. In general, delivery to date in relation to speed reduction, the redistribution of carriageway space and junction treatments has been relatively limited. However, a reduced speed limit of 30km/h was introduced on Bishops's Quay and Howley's Quay within the city centre in 2014 and Advance Stop Lines for cyclists were also installed at a number of junctions across the city centre.

TABLE 5.2: LIMERICK SMARTER TRAVEL BEHAVIOURAL CHANGE AND OTHER PROJECT COSTS

ITEM	COST
Salaries LCCC	€ 654,653 <i>(plus additional LCCC contribution of €258,369)</i>
Salaries UL	€367,658
School Travel Planning (incl. An Taisce costs)	€135,500
National Bike Week	€110,600 <i>(plus additional €93,000 DTTAS investment)</i>
Marketing and Promotions	€ 78,195
Community Travel Planning	€ 55,324
Workplace Travel Planning	€ 10,420
Misc.	€15,229
Bike parking rent	€ 14,604
Behaviour change costs in 2012/2013 ³⁰	€579,484
Total Behaviour Change Spend 2012-2017	€2,373,036



5.3.2 Behavioural Change Measures

The main behavioural change interventions proposed included: marketing and communications; workplace, school and campus travel planning; residential travel planning; a travel plan for Colbert Station; car sharing promotion; and 'Community Owned' initiatives which would support regeneration and social inclusion. However, due to the reduced funding provided a number of proposed behavioural change measures were not implemented, including:

- Residential and station travel planning;
- Smarter Working Practices pilot;
- Ultrasonic sensors on trucks;
- Bike Buddy; and
- Personalised Travel Planning.

Despite this, a comprehensive programme of behavioural change measures was delivered in Limerick, encompassing a schools programme, a workplace programme, a campus programme and a community programme. A breakdown of spend in these elements is provided in Table 5.2. Salary costs made up the majority of the overall behavioural change budget, this included project management and engineering resources as well as behavioural change resources. More detail on the interventions delivered can be found in Section 5.4.4.

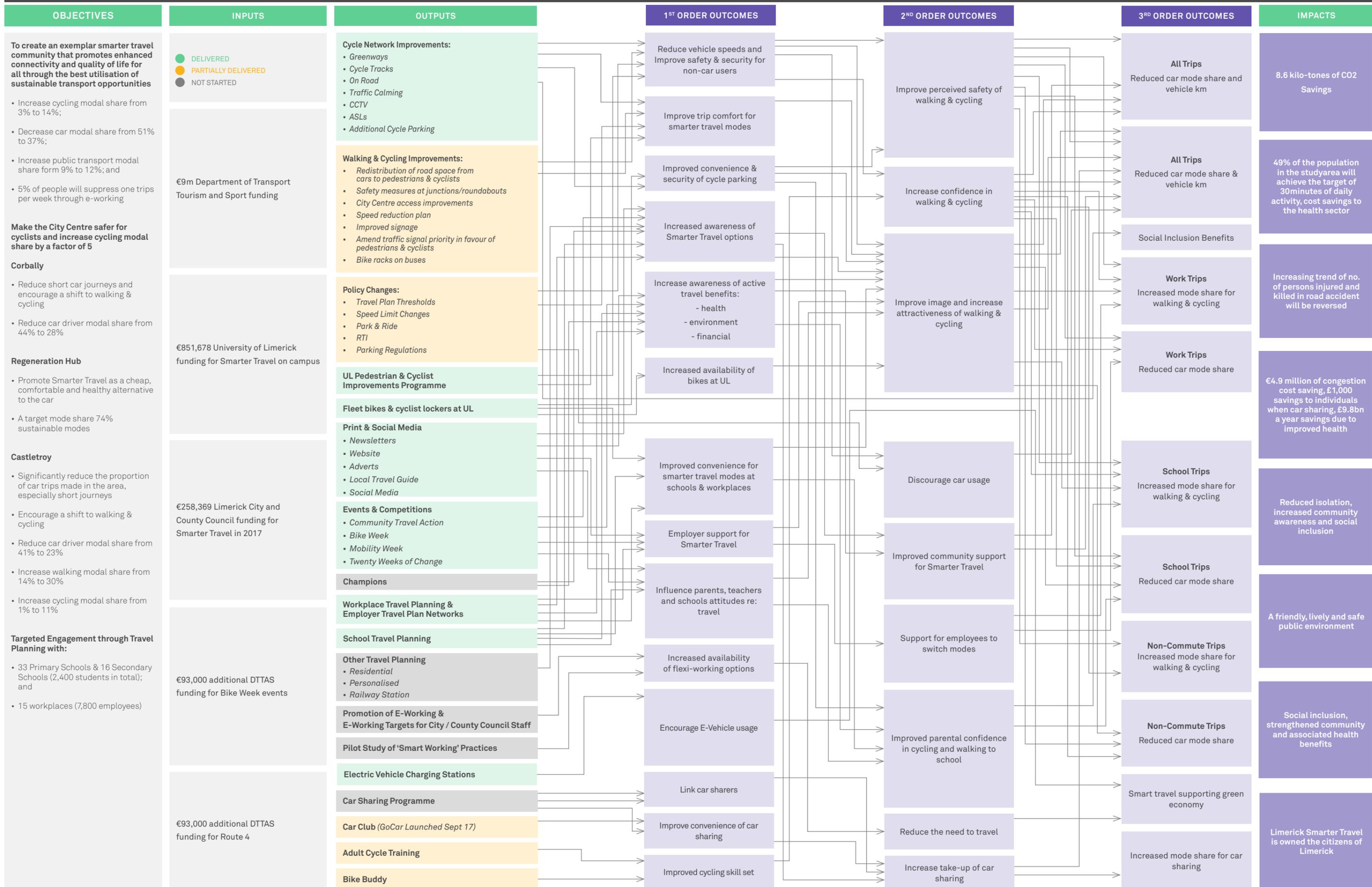
5.3.3 Summary

The investment programme in infrastructure and behavioural change measures in Limerick was modified following STA funding award, during the design and initiation phase. The outcomes and impacts of Smarter Travel investment in Limerick can therefore only be measured against schemes and initiatives that were delivered, which are summarised in the Logic Map in Figure 5.4.

The Logic Map is used throughout the evaluation to establish the causal links or pathways between interventions and anticipated or targeted outcomes. The Logic Map links programme outputs to the anticipated short/medium term outcomes. The map also includes the overall anticipated longer term impacts of investment which align with the programme objectives.

³⁰ Behaviour change spending information received was not broken down into separate categories prior to 2014

FIG 5.4: LOGIC MAP SUMMARY OF THE ANTICIPATED IMPACT OF THE SCHEMES DELIVERED THROUGH LIMERICK SMARTER TRAVEL



5.4 Programme Outcomes

This section provides a detailed analysis of the impact of Smarter Travel investment on travel patterns and attitudes in Limerick. Modal shift is the primary objective of Smarter Travel and therefore results of the Household Travel Survey (HTS) have again been used to provide the primary source of evidence. Modal shift identified through the HTS is referred to as the 'gross change', without changes in national controls taken into account. The National Travel Survey (NTS) provides a valuable control sample while the Census results of 2011 and 2016 have also been used as a secondary source of evidence. The 'net' level of modal shift in Limerick has been determined by calculating the difference between changes within the HTS and NTS control.



5.4.1 Modal Shift

The observed change in modal split is presented for the following main trip purposes:

- All trips;
- Employment trips;
- Education trips; and
- Non-commuting trips.

All Trips

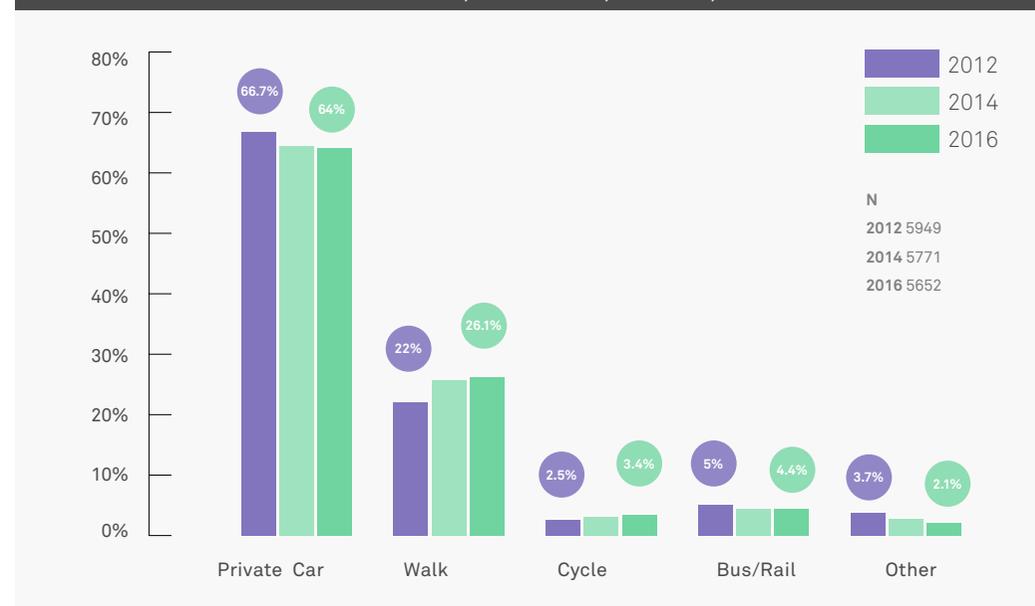
The change in mode share in Limerick for all trips is presented in Figure 5.5. Private car mode share changed by -2.7pp, from 66.7% in 2012 to 64% in 2016; most of this change took place between 2012 and 2014. The mode share of walking increased by +4.1pp, from 22% in 2012 to 26.1% in 2016; again, most of this change took place between 2012 and 2014. Cycling mode share increased marginally by +0.9pp, from 2.5% in 2012 to 3.4% in 2016.

For comparison, changes at a national level for 'all trips' were available from the NTS for 2012 and 2016 (Table 5.3). The NTS (excl. Dublin) showed that the reduction in private car use nationally was -0.8pp, lower than the -2.7pp

decrease observed in the LSTA. The net change in Limerick, taking into account the observed national change, was therefore -1.9pp. The increase in walking of +4.1pp observed in Limerick was higher than that recorded in the NTS, resulting in a net change of +3.9pp in Limerick. Similarly, the increase in cycling mode share in Limerick was higher than the control, generating a net change of +0.8pp between 2012 and 2016.



FIG 5.5: LIMERICK HTS, MODAL SHIFT, ALL TRIPS, 2012-2016



Limerick had the lowest proportion of employment trips less than 4km at 25% in 2016, compared to 38% in Dungarvan and 57% in Westport. With 45% of employment trips in Limerick 8km or more in distance, walking and cycling are less practical. Similarly, travel distances to education are longer with just 32.9% of escorted trips to education in Limerick less than 2km in 2016, compared to 37.1% in Dungarvan and 40.1% in Westport.

Despite this, there was evidence that fewer short trips were being made by car in 2016 compared with 2012. As shown in Figure 5.6, the proportion of trips being undertaken by car decreased across all distance bands with the exception of the longest band, 8km+. More

people are choosing to walk for trips of 4km or less and there has been an increase in the mode share of cycling for trips between 4km and 6km. Congestion in Limerick causes longer delays than in the other two STAs, and as a result walking and cycling could, in some instances, be considered better alternatives for those making short trips. Congestion may also have increased over the duration of the STA programme, as traffic data from TII permanent counters³¹ on the R445 between Castletroy and Annacotty shows that AM peak hour traffic increased by 20% from March 2014 to March 2017.

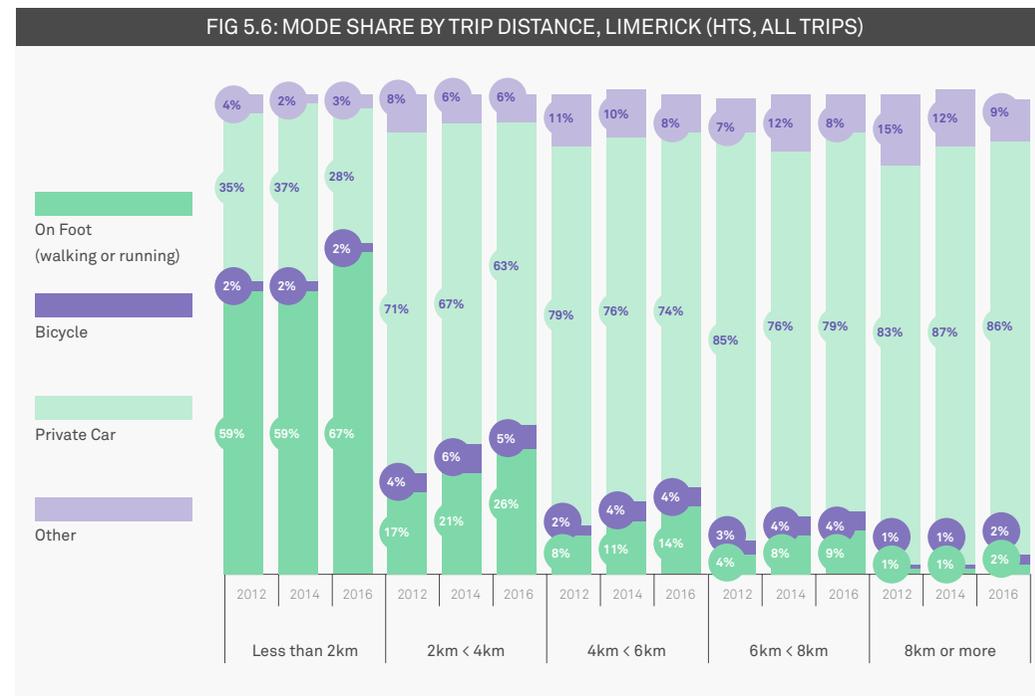
To understand the observed modal shift in more detail, a demographic analysis of the HTS results

(2012 to 2016) was completed, which considered the influence of gender, age and socio-economic group. Analysis of the results according to gender highlighted differences between the level of change among male and female respondents (Table 5.4). There was a greater increase in walking among men (+5.8pp) than women (+2.5pp). There was a modest but significant increase in cycling (+2.2pp) among male respondents, compared to no significant change among women (-0.2pp). As a consequence of these trends, there was a significant reduction (-4.5pp) in private car use amongst male respondents, and an insignificant reduction among female respondents (-1.2pp).

31 Transport Infrastructure Ireland has a network of permanent counters nationally with count data made publicly available online.

TABLE 5.3: COMPARISON OF LIMERICK HTS SURVEY RESULTS WITH NTS

	Limerick STA		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	64%	-2.7	66.8%	-4.0	81.3%	-0.8	74.3%	-2.2
On Foot	26.1%	4.1	24.8%	4.4	11.5%	0.2	14.6%	1.0
Bicycle	3.4%	0.9	3.1%	0.8	0.7%	0.1	1.7%	0.5
Public Transport	4.4%	-0.6	2.9%	-0.1	2.0%	-0.4	5.5%	0.3
Lorry/ Motorcycle/ Other	1.1%	-1.1	1.6%	-0.9	4%	1.0	3.1%	0.4
Taxi	1%	-0.5	0.8%	-0.2	0.5%	-0.1	0.8%	0.0



Examining the results according to age group highlighted that private car use reduced for most ages, except for the groups 50–59 and 65+ (Table 5.5). The largest reductions in private car use were observed for the 25–29 (-9.6pp) and 60–64 (-8.9pp) age cohorts, with the majority of the modal shift attributed to an increase in walking. Small increases in cycling were observed in most age groups, but the only statistically significant change was observed for the 30–39 age group, which saw an increase of +1.8pp.

HTS respondents were coded to a socio-economic group according to the occupation

of the Chief Income Earner in the household following a standard classification (descriptions of each group are provided in Chapter 3). The analysis of socio-economic groups (Table 5.6) showed that private car use reduced in all groups except for socio-economic group 'D' where there was a significant increase (+4.8pp) in car travel. The largest increase in walking was observed in socio-economic group 'E' (+9.7pp) but there were also significant increases in socio-economic groups 'C1' (+6.2pp, lower middle class), 'C2' (+5.8pp, skilled working class) and 'AB' (+3.6pp, upper middle class). There was a slight increase in the amount of cycling in all groups except for



TABLE 5.4: % CHANGE IN MODE (2012 – 2016) ACCORDING TO GENDER (HTS, ALL TRIPS)

	Male		Female	
	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	60.6%	<u>-4.5</u>	67%	-1.2
On Foot	27.2%	<u>+5.8%</u>	25.1%	<u>+2.5</u>
Bicycle	5.9%	<u>+2.2</u>	1.2%	-0.2
Bus	2.9%	<u>-1.1</u>	5.2%	-0.4
Rail	0.2%	-0.1	0.5%	<u>+0.3</u>
Taxi/Hackney	1.3%	-0.2	0.7%	<u>-0.9</u>
Van / Lorry	1.7%	<u>-2.1</u>	0.3%	0.0
Motorcycle	0.2%	-0.1	0.0%	0.0
Other	0.1%	0.1	0.0%	-0.1

TABLE 5.5: % CHANGE IN MODE (2012 – 2016) ACCORDING TO AGE GROUP (HTS, ALL TRIPS)

	All trips, Limerick, change in mode share in percentage points, comparing 2012 with 2016						
	18–24	25–29	30–39	40–49	50–59	60–64	65+
Private Car	<u>-4.2</u>	<u>-9.6</u>	<u>-4.9</u>	-1.8	1.8	<u>-8.9</u>	3.2
On Foot	<u>5.7</u>	<u>6.4</u>	<u>6.8</u>	<u>5.3</u>	-2.3	<u>6.3</u>	1.4
Bicycle	1.3	1.5	<u>1.8</u>	0.0	0.5	0.3	0.7
Bus	-2.3	<u>3.0</u>	<u>-1.3</u>	-1.1	-0.7	2.5	-1.4
Rail	0.8	0.3	0.1	-0.1	0.0	0.4	<u>-1.0</u>
Taxi/Hackney	<u>-1.3</u>	<u>0.7</u>	<u>-1.0</u>	<u>-1.0</u>	-0.1	1.3	-0.4
Van / Lorry	-0.2	-1.2	<u>-1.5</u>	<u>-1.8</u>	0.7	-1.8	<u>-1.7</u>
Motorcycle	0.0	-0.9	0.0	0.4	0.1	0.0	0.0
Other	0.2	0.0	0.0	0.0	0.0	0.1	-0.7
N (2016)	960	723	1266	1011	767	296	611

Employment Trips

socio-economic group 'E' (-1.3pp, low income works/pensioners/unemployed), but the only statistically significant increase for cycling was among socio-economic group 'C1' (+1.9pp, lower middle class).

Even without the strong results of group E, the finding of reduced car mode share for all other groups combined is still statistically significant. The increase in walking mode share (+3.2pp) and cycling mode share (+1.3pp) for social groups A to D combined is also still statistically significant.

The proportion of the Limerick HTS sample who were unemployed reduced from 12% in 2012 to 9% in 2016, which was still higher than the unemployment rate of 6% within the national comparator sample. This increase in employment is likely to have contributed to the 22.4% increase in the number of commuting trips undertaken by HTS respondents in 2016 compared to 2012. Increases in employment generally result in an increase in car use and in this context, the reduction in car mode share across the Limerick STA is a positive outcome.

Higher unemployment rates in Limerick compared to the national comparator may also have impacted modal choice. For example, bike ownership per household in Limerick was 0.81 in 2016 compared to 1.15 in the national comparator sample, and car ownership was also lower at 1.26 per household compared to 1.65. Socio-economic factors are therefore likely to have impacted modal shift in Limerick, similar to Dungarvan. Information on the demographic composition of the HTS sample is provided in the Household Travel Survey report in Appendix D.

The change in mode share for employment trips is presented in Figure 5.7. Private car mode share for trips to work changed by -4.6pp, from 82.4% in 2012 to 77.7% in 2016. A larger proportion of the total change was recorded between 2012 and 2014 than between 2014 and 2016. Walking mode share increased by +3.6pp, from 8.1% in 2012 to 11.8% in 2014, with no further increase recorded in 2016. Cycling mode share for trips to work increased marginally, but not significantly, by +0.2pp, from 3.5% in 2012 to 3.7% in 2016, having decreased in 2014.

A direct comparison of mode share for commuting journeys only with the National Travel Survey is not possible as the National Travel Survey journey purpose of 'work' includes both commuting and business travel. On this basis, the HTS results have been updated to include both commuting and business trip, as shown in Table 5.7. The NTS (excl. Dublin) data shows that the reduction in private car mode share nationally for 'work' trips was -0.2pp. This is lower than the reduction in car mode share for commuting and business travel combined in Limerick of -0.6pp. The combined increase in walking and cycling mode share for commuting and business travel in Limerick was +5.3pp, which contrasts with the change in combined mode share of walking and cycling in the national control for these trips (-0.4pp).

An additional source of data on mode share for trips to work is provided by the Census, which records individuals' 'usual' mode for travel to work (rather than their travel on a particular day as recorded in the HTS/NTS).

TABLE 5.6: % CHANGE IN MODE (2012 – 2016) ACCORDING TO SOCIO-ECONOMIC GROUP (HTS, ALL TRIPS)

All Trips, Limerick, Change in Mode Share in Percentage Points, Comparing 2012 with 2016					
	AB	C1	C2	D	E
Private Car	-5.8	-6.4	-3.6	4.8	-8.1
On Foot	3.6	6.2	5.8	-1.3	9.7
Bicycle	0.3	1.9	0.9	1.7	-1.3
Bus	0.4	-0.9	0.8	-1.8	0.0
Rail	-0.2	0.5	-0.6	0.0	-0.1
Taxi/Hackney	0.2	-0.9	-2.1	1.2	0.8
Van / Lorry	1.5	-0.3	-1.6	-3.9	-0.6
Motorcycle	0.0	-0.1	0.6	-0.6	0.2
Other	0.0	0.1	0.0	0.0	-0.5
N (2016)	1083	1990	771	916	806

FIG 5.7: LIMERICK HTS, MODAL SHIFT, EMPLOYMENT TRIPS, 2012-2016

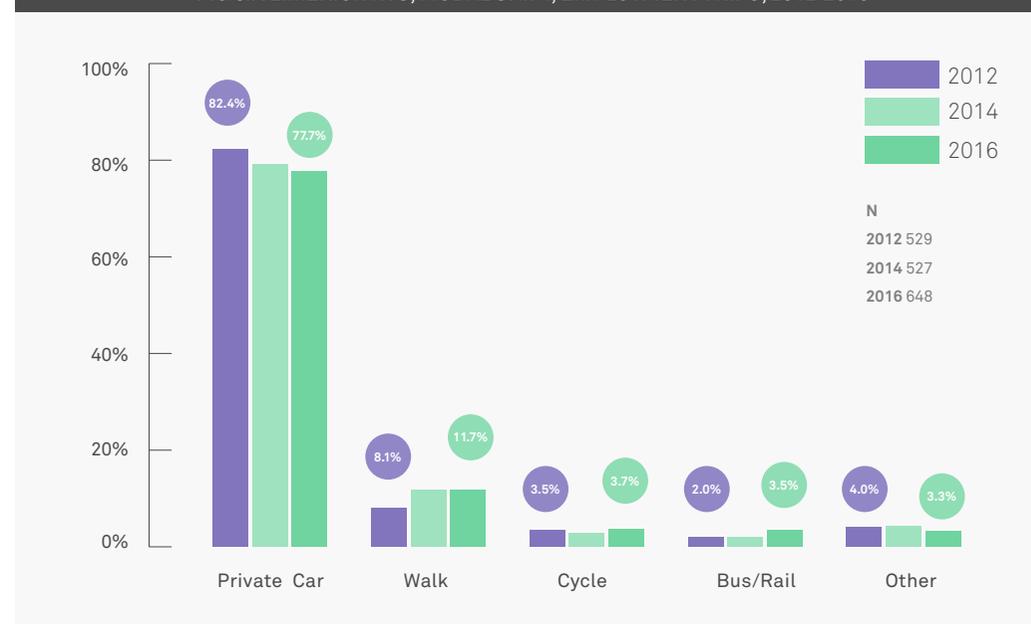


TABLE 5.7: WORK TRIPS (COMMUTING AND BUSINESS TRAVEL COMBINED)
- COMPARISON OF HTS SURVEY RESULTS WITH NTS

	Limerick STA		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	77%	-0.6	75.5%	-1.7	81.5%	-0.2	73.1%	-1.5
Walk / Cycle ³²	15.3%	5.3	16.82%	4.4	6.6%	-0.4	11.8%	1.8
All Other	7.7%	-4.7%	7.7%	-2.7	11.9%	0.6	15.1%	-0.4

TABLE 5.8: USUAL MODE OF TRAVEL TO WORK (CENSUS, 2011 – 2016)

	Limerick STA		Limerick Comparison Area		Castletroy	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	68.8%	-2.2	70.1%	-0.8	80.7%	-2.2
Walk	16.2%	0.3	15.3%	-0.6	7.2%	0.5
Cycle	3.2%	0.6	2.7%	0.4	3%	0.9
Bus/Rail	5.3%	1.0	5.3%	0.9	3%	0.6
Other	6.5%	0.2	6.5%	0.1	6%	0.3
Total (n)	16213		16482		5087	

Education Trips

Changes in mode share for employment trips within the Limerick STA were also compared against the Limerick Comparison area and Castletroy using Census 2011 and 2016 results. Smarter Travel delivery in Limerick was heavily focused on Castletroy and as such, a more detailed assessment of travel patterns within the area was undertaken. Table 5.8 presents the results, summarised as follows:

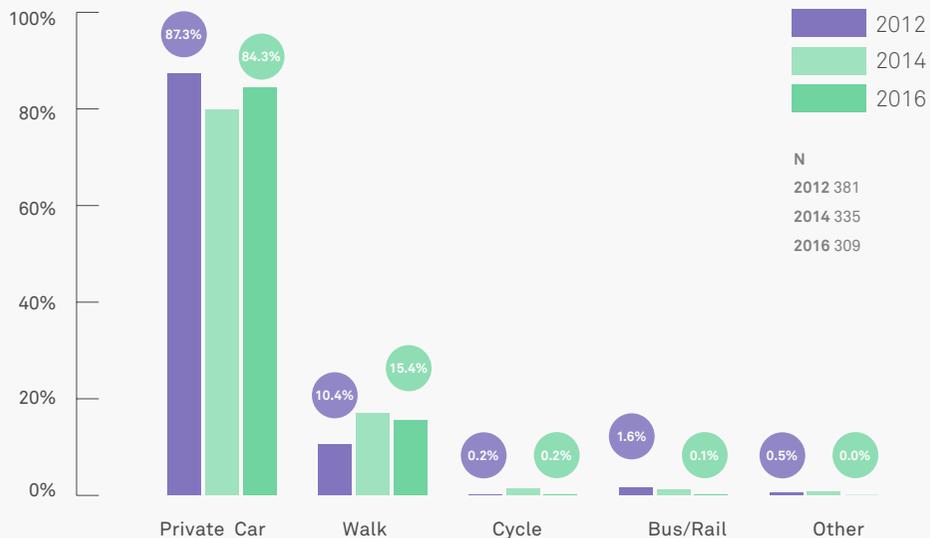
- The Census data recorded a decrease in car mode share in the Limerick STA (-2.2pp) but a smaller decrease in car mode share in the Limerick Comparison area (-0.8pp). There were small increases in public transport and cycling mode share in both the LST area and the Limerick Comparison Area, while walking increased slightly in the Limerick STA and decreased in the Comparison area; and
- Changes in car mode share were broadly similar in Castletroy to the change in the overall Limerick STA, but the increases in walking and cycling mode share were slightly more positive in Castletroy. On this basis, it can be assumed that the impact of Smarter Travel is greater in the Castletroy area. Unfortunately it is not possible to split the HTS results into specific geographical areas to gain more insight to the relative difference in mode share between the hubs and control areas. However, based on the Census results, it can be assumed that the overall HTS results for Limerick STA may be under-estimating the impact of Smarter Travel in key areas such as Castletroy.

Education trips are divided into escorted education trips and independent education trips. As mentioned previously, the HTS can only cover trips made by those over 18. The majority of independent education trips recorded were therefore trips to third level education. Escorted education trips represent trips taken by persons over 18 years of age to escort another person to any level of education (including childcare and third level). The age of the person being escorted is not identified, but the majority of these trips are assumed to be school trips. Unfortunately, the NTS does not record the purpose of escorted trips and therefore data is not available for direct comparison with the HTS.

Car mode share for escorted education trips changed by -3.0pp, from 87.3% in 2012 to 84.3% in 2016 (Figure 5.8). The car mode share for 2016 represented an increase in comparison to 2014, when a lower car mode share of 79.8% was recorded. The mode share of walking for escorted education trips increased by +5.0pp, from 10.4% in 2012 to 15.4% in 2016; a higher walking mode share of 17% was recorded in 2014. There was no change in cycling mode share and only one escorted education trip by bicycle was recorded in both 2012 and 2016.

³² Walking and cycling mode share have been combined in tables for specific trip types based on CSO advice that for some trip types, the NTS sample size was too small to yield statistically reliable figures for modes with small numbers of trips.

FIG 5.8: LIMERICK HTS, ESCORTED EDUCATION TRIPS, (HTS 2012-2016)



Car mode share for independent education trips in Limerick changed by -4.3pp from 21.2% in 2012 to 16.9% in 2016 (Figure 5.9). There was no change in car mode share from 2014 to 2016. Walking mode share increased by +3.0pp, from 64.2% in 2012 to 67.2% in 2016. All of this increase was recorded between 2014 and 2016, as the walking mode share had previously declined in 2014 to 62.7% from 64.2% in 2012. Cycling mode share increased by +3.7pp, from 7.2% in 2012 to 10.9% in 2016, although it should be noted that from 2014 to 2016 there was a decline in cycling mode share which was reported at 15.3% in 2014. From the data alone it is not possible to determine the cause of this variation.

The Census 2011 and 2016 provided additional information on education trips in Limerick which showed a very slight shift towards sustainable modes for education trips in LST between 2011 and 2016, although when considered by school type, variations can be discerned.

For the journey to school or college (Table 5.9), private car mode share reduced slightly (-0.3pp), while cycling (+0.7pp) and public transport (+0.2pp) increased slightly. However, walking mode share also reduced slightly (-0.4pp). The Limerick Comparison Area contrasts with LST area by recording a 1.4pp increase in private car mode share, as well as decreases in walking and cycling mode share. The most positive change in mode share for education trips was recorded

FIG 5.9: LIMERICK HTS, INDEPENDENT EDUCATION TRIPS, 2012-2016

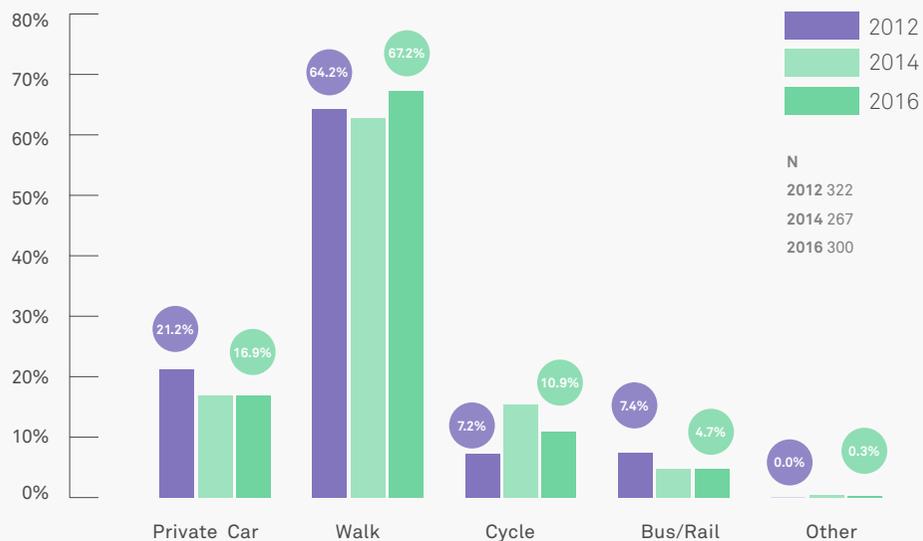


TABLE 5.9: USUAL MODE OF TRAVEL TO SCHOOL OR COLLEGE – PUPILS/STUDENTS AGED 5+, CENSUS 2011 – 2016

	Limerick STA		Limerick Comparison Area		Castletroy	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	47.7%	-0.3	50.4%	1.4	45%	-2.2
Walk	38.3%	-0.4	33%	-2.7	43.1%	0.4
Cycle	4.0%	0.7	1.7%	-0.5	5.5%	1.3
Bus/Rail	9.6%	0.2	14.4%	1.7	6.2%	0.9
Other	0.3%	-0.2	0.5%	0.1	0.3%	-0.4
Total (n)	11163		9280		4126	

Non-Commuting Trips

in Castletroy which received the most intensive deployment of the programme, where private car mode share decreased by -2.2pp. The increase in cycling mode share in Castletroy (1.3pp), although still relatively small, was almost twice the increase recorded in the STA as a whole.

In order to provide a more holistic overview of the outcomes of the STA demonstration project, the evaluation also considered the impact on “non-commuting” trips. In the STA context, this includes all trips excluding trips to work, education and escorting trips. For non-commuting trips, private car mode share changed by -2.6pp, from 64.9% in 2012 to 62.3% in 2016 (Figure 5.10). Walking mode share over the same period increased by +6.5pp, from 21.5% in 2012 to 28.1% in 2016. Most of this increase in walking mode share took place between 2012 and 2014. There was a minor increase in cycling mode share of +0.5pp between 2012 and 2016, from 2% to 2.5%.

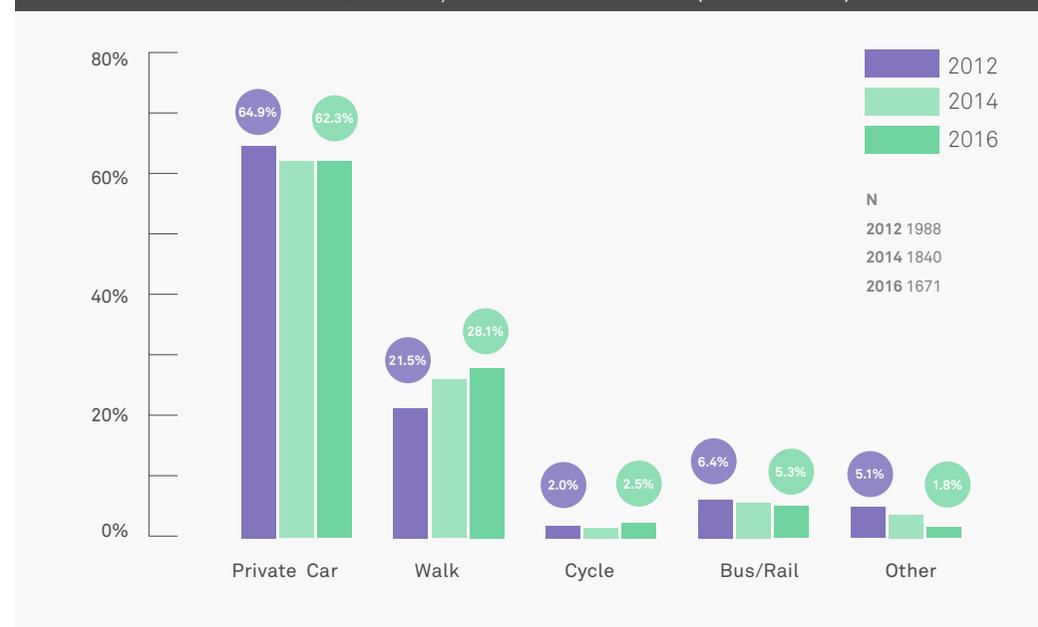
The change in mode share for non-commuting trips was compared against the NTS.³³ The NTS (excl. Dublin) data shows that there was a marginal increase in private car mode share nationally for non-commuting trips of 0.1pp. In contrast, car mode share for non-commuting trips in Limerick reduced by -2.6pp. The combined increase in walking and cycling mode share observed in Limerick for these trips (+7.1pp) also contrasts with the national control where an increase of +0.1pp was observed.



³³ Note that within the HTS data, business/other work related trips have been included as 'non-commuting' trips, but this trip type is excluded from the NTS non-commuting data, as the NTS does not separate commuting and other work trips. However, these trips make up only a small proportion of the total non-commuting trips in the HTS sample.



FIG 5.10: LIMERICK HTS, NON-COMMUTING TRIPS (HTS 2012-2016)



Summary of Modal Shift in Limerick

The headline changes observed between 2012 and 2016 in the mode split of trips in Limerick were therefore:

- There was a net reduction of 1.9pp in car use for all trips, compared to a 4.1pp increase in walking and 0.8pp increase in cycling;
- The greatest change in mode share for all trips was observed among male respondents to the HTS, recording a 4.5pp gross reduction in car use (compared to a 1.2pp gross increase amongst women);
- The greatest change in mode share for all trips was also observed amongst respondents between 25-29 years of age (-9.6pp gross reduction in the use of private car) and the 60-64 years of age (-8.9pp change in car use). The main shift in mode use was to walking in both instances;
- There were changes in mode share between private car and walking across most socio-economic groups;
- Most of the change in mode share was recorded from 2012 to 2014, with very limited change observed between 2014 and 2016. This is despite the fact that most of the infrastructure was delivered in the later phases of the programme with the early stages heavily concentrated on behavioural change in schools, workplaces and across communities.

- The gross reduction in car mode share for employment trips was 4.6pp. Again, the main shift was to walking, which increased by 3.6pp (gross change);
- The gross reduction in car mode share for escorted education trips was 3.0pp, with the main shift occurring to walking, which increased by 5.0pp (gross change);
- The gross reduction in car mode share for independent education trips was 4.3pp, with the main shift occurring to walking, which increased by 3.0pp (gross change). Cycling mode share also increased, by 3.7pp but from a much lower baseline of 7.2% in 2012 compared to 64.2% for walking; and
- Although there was a lower gross change in car use for non-commuting trips (-2.6pp) there was a significant gross increase in walking mode share of 6.5pp. Trips were also abstracted from public transport (-1.1pp) and other modes (-3.3pp).

TABLE 5.10: NON-COMMUTING TRIPS - COMPARISON OF HTS RESULTS WITH NTS

	Limerick		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	62.3%	-2.6	64.4%	<u>-3.1</u>	79.7%	0.1	72.8%	-1.6
Walk / Cycle	30.6%	7.1	30.7%	6.2	15.5%	0.1	19.7%	1.3
All Other	7.1%	-4.5	5%	-3.1	4.9%	-0.2	7.5%	0.3



5.4.2 Attitudes and Perceptions

As outlined in Chapter 2, the HTS included a series of questions to ascertain respondents' attitudes and perceptions of various aspects of their town. These questions were asked as part of the 2012, 2014 and 2016 HTS, in both the STAs and in a comparator sample from across Ireland. The focus of the analysis has been on any reported change between 2012 and 2016, which is summarised below:

- The proportion of pedestrians who found it easy to get around their area on foot increased from 87.0% in 2012 to 91.8% in 2016, a change of +4.8pp. By comparison, the equivalent proportion in the control decreased over the same time period from 85.1% to 85.0%, a -0.1pp change. The net change within Limerick was therefore +4.9pp;
- The proportion of respondents who felt their area was safe to walk in (considering risk from traffic) increased from 88.4% in 2012 to 93.8% in 2016, a change of +5.4pp. By comparison, there was a slight decrease of 0.8pp in the control from 75.9% to 75.1%. The net change within Limerick was therefore +6.2pp;
- The proportion of cyclists who found it easy to get around their area by bike increased from 66.4% in 2012 to 74.7% in 2016, a +8.3pp change. In comparison, the equivalent proportion in the control decreased over the same time period from 78.4% to 69.1%, a -9.3pp change. The net change within Limerick was therefore +17.6pp; and

- The proportion of respondents who felt their area was safe to cycle in (considering risk from traffic) increased from 70.7% in 2014 to 74.5% in 2016, a change of +3.8pp. By comparison, there was a decrease of 7.7pp in the control sample from 68.4% in 2014 to 60.7% in 2016. The net change in Limerick was therefore +11.5pp.

These results therefore reported a substantial net improvement in the attitudes and perceptions of Limerick residents regarding the permeability of the town and the level of associated safety. As outlined in the Logic Map (Figure 5.4), changes in individuals' awareness, attitudes and perception of sustainable transport and facilities provided are important first and second order outcomes. As such, they are pre-cursors to achieving changes in travel behaviour and thereby will have contributed to the changes in mode share reported in Limerick. The following sections explore the contribution narrative for Limerick.

A central challenge within the evaluation was to consider the relative contribution of the various infrastructure and behaviour change activities to the observed changes in both attitudes/perceptions and mode share. The following sections explore the contribution narrative for Limerick.

5.4.3 Infrastructure Investment Outcomes

Infrastructure expenditure accounted for 77%, (€7,923,009) of the funding invested in the Limerick project. Linking the Limerick STA 'hubs', discouraging car use and improving the safety, convenience and attractiveness of walking and cycling were the key planned outcomes of infrastructure investment in Limerick to encourage modal shift. Results from the HTS indicate that since 2012 the community perception of both the safety and the attractiveness of walking and cycling has improved in the Limerick STA, especially in comparison to the control sample.

This evaluation has considered the contribution of infrastructure investment to the above observed changes in local resident's perceptions/attitudes, and thereby the contribution to observed changes in mode share. The infrastructure investment was assessed in three groups:

- Greenways;
- On-road cycling infrastructure; and
- End of trip facilities.

Within each of these, the following information is provided:

- Intervention objectives;
- Interventions delivered;
- Outcomes and impacts, focusing on the contribution narrative; and
- Lessons learnt in terms of transferability and scalability.



GREENWAY INFRASTRUCTURE IN LIMERICK

Intervention Objectives

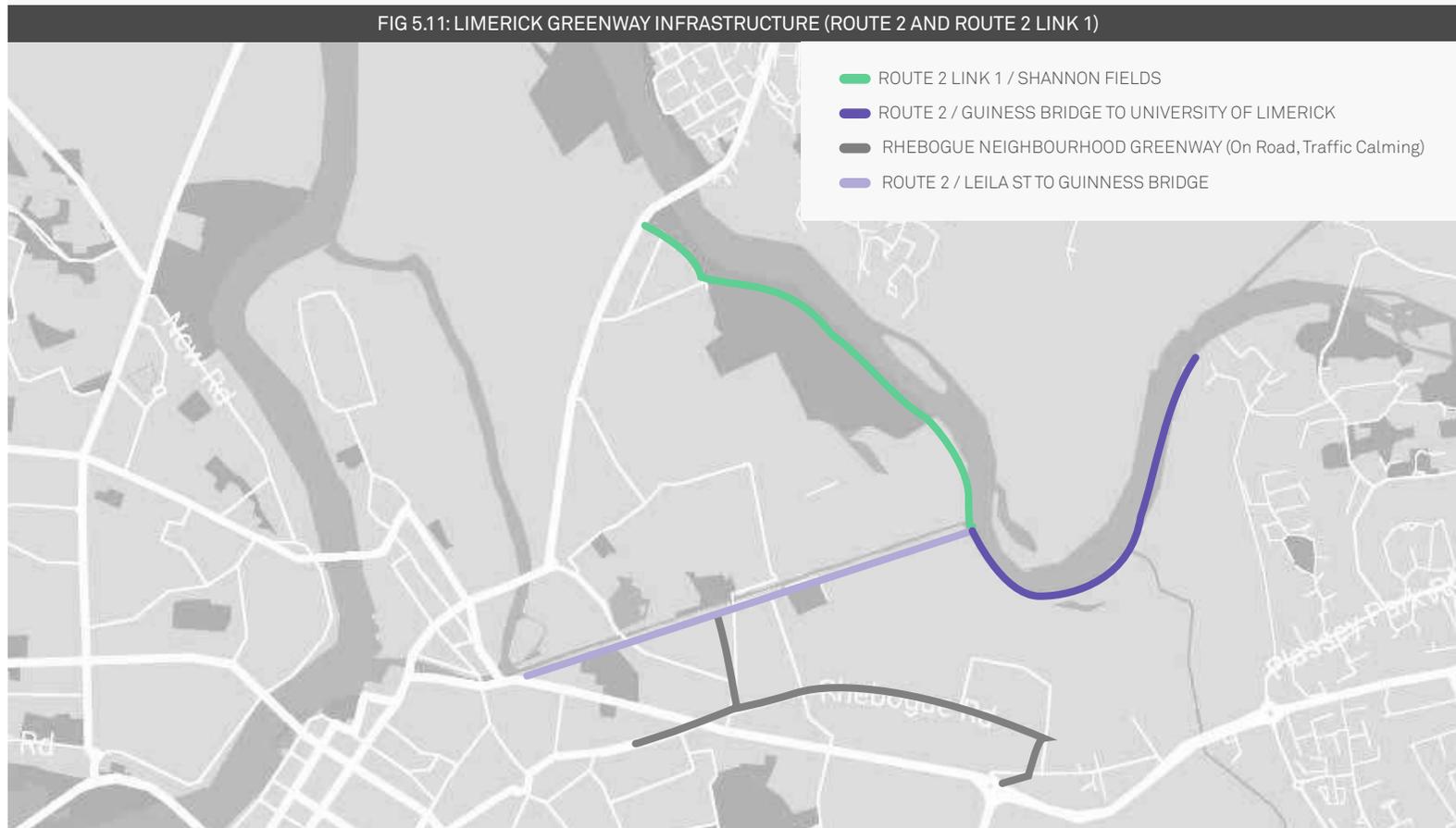
The main objectives of providing off-road walking and cycling infrastructure were:

- To provide safe facilities, segregated from road traffic;
- To provide a continuity of facility for walking and cycling; and thereby
- To encourage modal shift for commuting, education and leisure trips.

Interventions Delivered

The majority of infrastructure investment in Limerick was invested in a flagship greenway route (known as Route 2) along the south banks of the River Shannon, as shown in Figure 5.11. In total, approximately 5km of new and upgraded shared walking and cycling path was delivered, which included the 3.5km section linking the City Centre to the University of Limerick (located in the Castletroy 'hub') and an additional 1.6km link through the 'Shannon Fields' area, which links the route to the Corbally 'hub'. A link (known as Route 2 Link 1) was also provided along the River Shannon from Route 2 to Corbally, which meant that these schemes were connected to three of the four designated hubs in the overall LST area. Route 2 accounted for approximately 39% of total LST infrastructural investment (€3,102,712). Completion of the route involved bridge upgrades and the provision of a new asphalt surface along the entire length of the route, as well as new public lighting and

FIG 5.11: LIMERICK GREENWAY INFRASTRUCTURE (ROUTE 2 AND ROUTE 2 LINK 1)



Raised boardwalk on Route 2



Junction of Route 2 and Shannon Fields Link (Route 2 Link 1)

CCTV cameras. Part of the route is located in a Special Area of Conservation and this contributed to delays in obtaining planning approval for the scheme.

Outcome of Greenways

There is both quantitative and qualitative evidence that the greenways have been well received by the local community in Limerick. Automatic pedestrian and cycle counters at various points along the route (Park Road and Shannon Fields) demonstrated that the volume of pedestrians and cyclists had increased substantially from 2015 to 2017 (Figures 5.12 to 5.15). The increase in trips was likely to be partially linked to the full completion of all sections of Route 2 between the City Centre and UL during the latter part of 2016.

Intercept surveys undertaken on the greenways in October 2017 at Park Road and at Shannon Fields indicate the following:

- Almost three quarters of all respondents were making a trip on the greenway for the purpose of recreation, 13% were for travel to work and 12% for travel to education;
- Among those using the greenway for a recreational trip on the day of the survey, just 20% use the route for other trip purposes, the most common one being for shopping;

FIG 5.12: CYCLE COUNTS ON THE CANAL PATH AT PARK ROAD RAILWAY BRIDGE 2015-2017

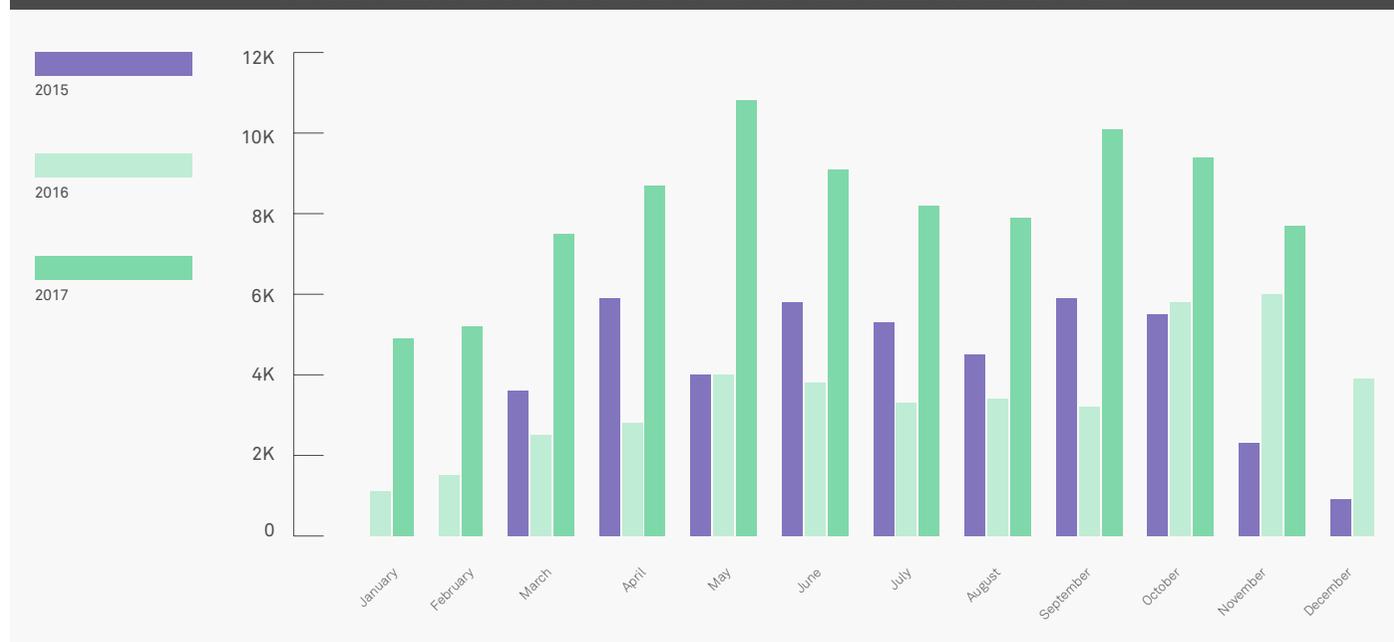


FIG 5.13: PEDESTRIAN COUNTS ON THE CANAL PATH AT PARK ROAD RAILWAY BRIDGE 2015-2017

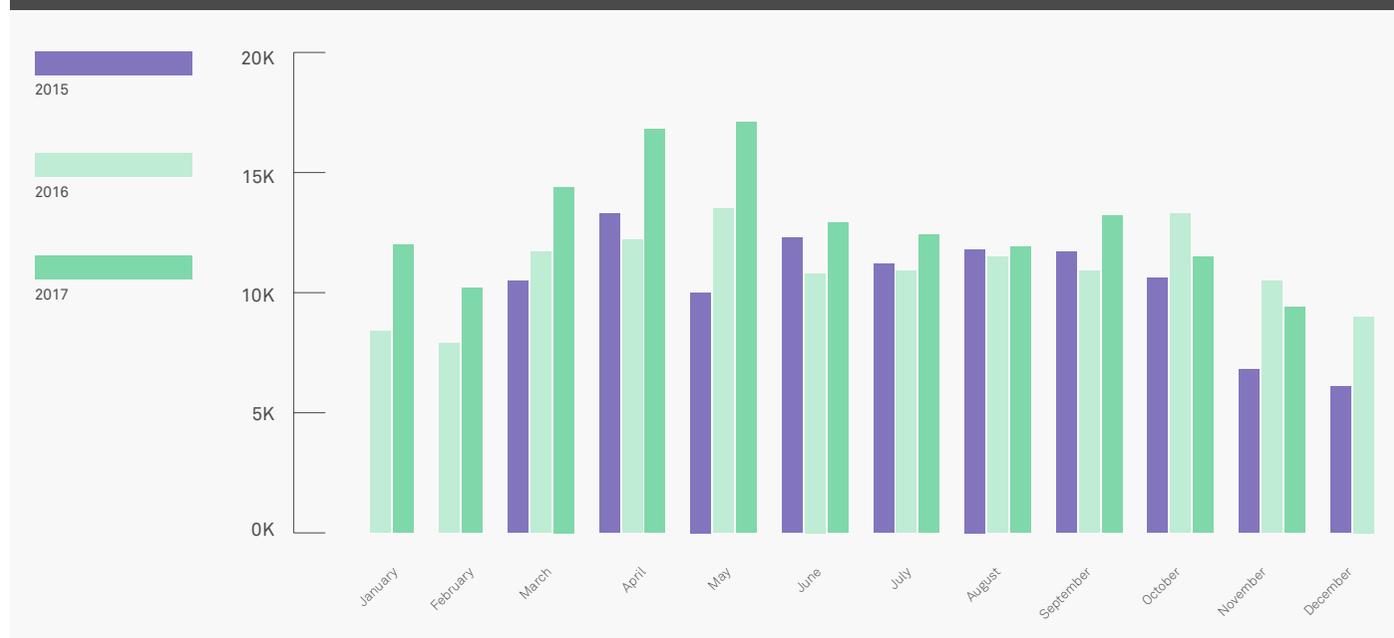


FIG 5.14: CYCLE COUNTS AT SHANNON FIELDS 2015-2017

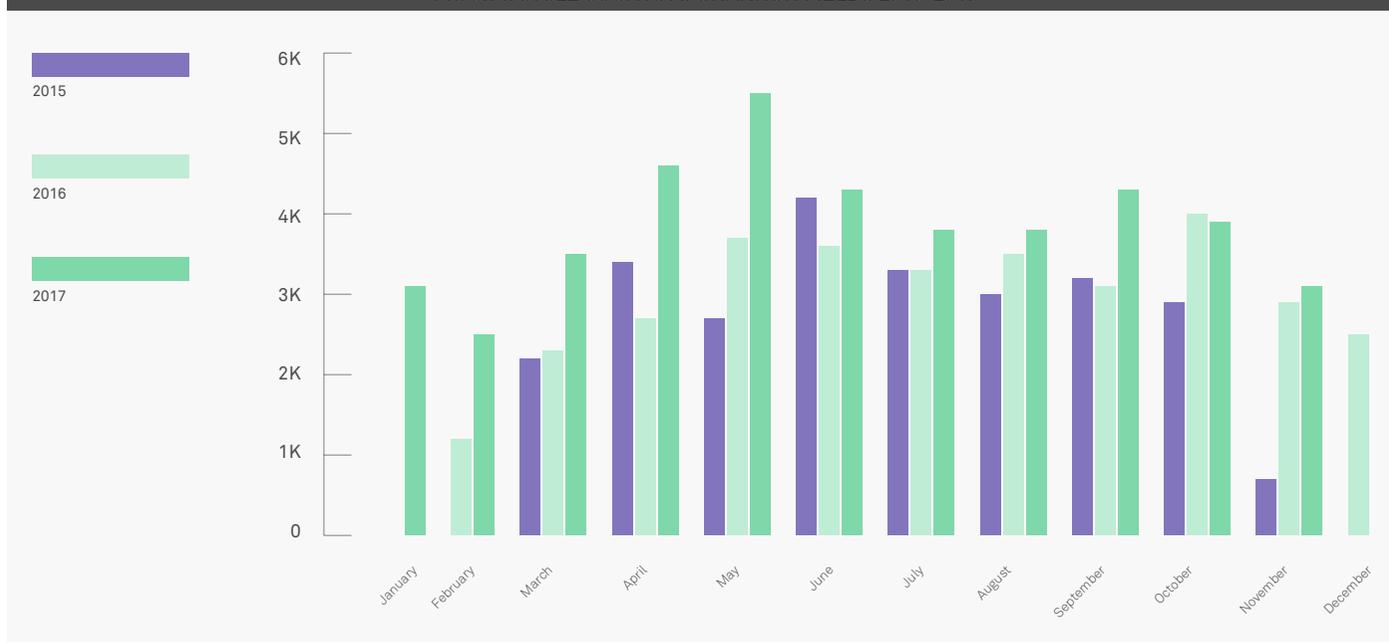
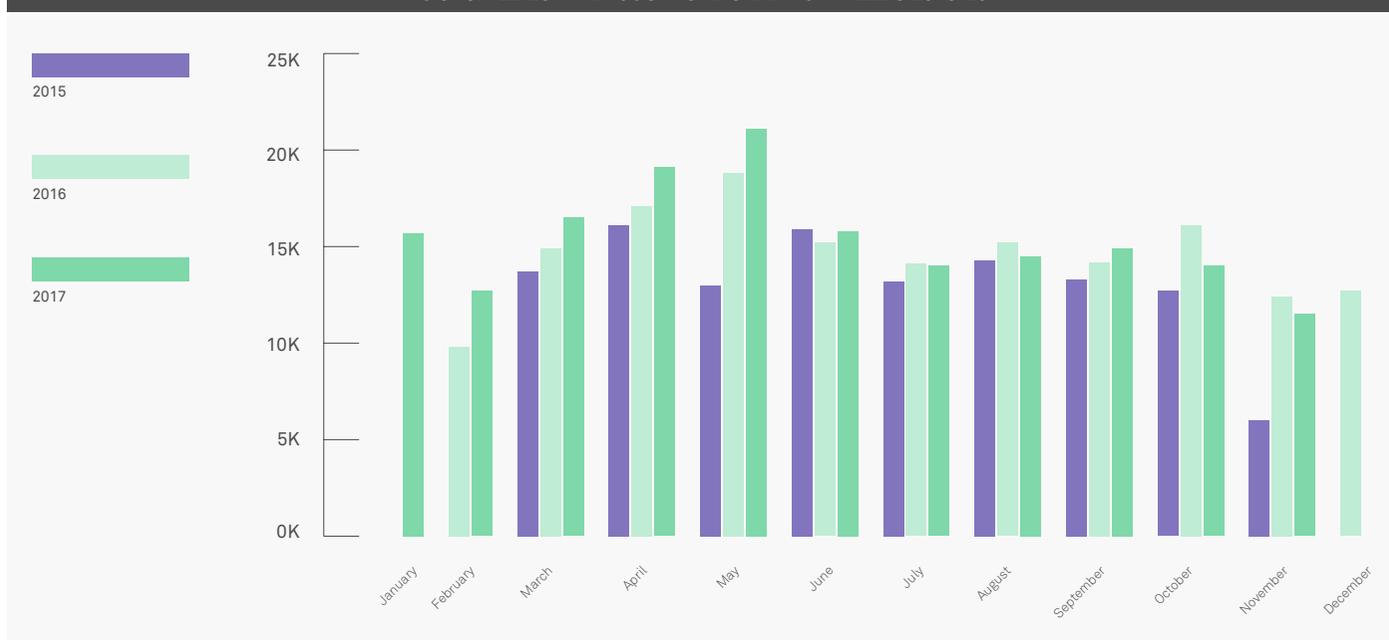


FIG 5.15: PEDESTRIAN COUNTS AT SHANNON FIELDS 2015-2017



- Although the intercept survey sample was small, there is some evidence that the scheme influenced modal shift. A small number of respondents who were cycling when surveyed had previously made the same trip type on foot or by car, while a small number who were walking previously made their trip by car or by bus;
- The main factors influencing respondents' decision to use the route were the scenic value of the route as well as the safety it offers, away from traffic and with a relatively smooth surface;
- The greenway is perceived by respondents to provide a good alternative route for walking and cycling between UL and the city, avoiding the need to use busy roads;
- Almost 100% of respondents felt the route was safe to use during the day, especially since upgrades to lighting and CCTV on the route. This is contrary to perceptions of safety on the route made by qualitative research participants, who may not be regular users of the route;
- Two thirds (65%) of respondents felt the route was safe to use in winter evenings after dark, which is a reasonably positive outcome considering there is little active frontage on the route. Many participants

Lessons Learnt

highlighted that since the scheme was delivered, much higher numbers using the greenway means the perception of safety and security along the route has also improved; and

- One of the most commonly cited negative themes raised in relation to the greenway (by almost one quarter of respondents) related to sharing space with cyclists. In some cases this was restricted to a complaint that many cyclists do not have bells, but a range of other related views were also raised, such as a view that some cyclists travel too fast.

“The surface is easy to walk and cycle as it’s not as potholed and ridged as it used to be.”

– Limerick Greenway Intercept Survey Respondent

“It’s safe to use the greenway, you meet a lot of people you know along it. It has improved since the new paths were completed. Lots more people are using it, the more people there are using it, the safer it is.”

– Limerick Greenway Intercept Survey Respondent

Greenways similar to that delivered in Limerick can be delivered in most urban environments but can be constrained by surrounding land uses. Key lessons learnt in Limerick from delivery were as follows:

- Greenway investment in Limerick has been successful in attracting recreational trips. Additional promotion of the route, in schools, workplaces and residential areas will need to be undertaken to encourage additional modal shift for peak hour trips;
- Routes to the greenway facility also need to offer a high level of cycling safety to encourage modal shift. This may include more off-road type infrastructure; and
- Conflicts between cyclists and pedestrians should be addressed through the design process (path width and signage) as well as through behavioural change campaigns regarding safe greenway use.



ON-ROAD CYCLING INFRASTRUCTURE

Intervention Objectives

The main objectives of providing on-road cycling infrastructure were:

- To provide on-road cycling infrastructure where there was a perceived travel demand but where it wasn't possible to deliver a higher standard off road facility;
- Improve the actual and perceived safety for cyclists; and thereby
- To encourage modal shift.

Interventions Delivered

Only 1km of dedicated on-road cycling infrastructure was delivered up to the end of 2016; although work was ongoing on 1.5km of new cycle infrastructure on the Old Tipperary Road (L1171) and Garryglass Road (L5124). The 1km route delivered within the STA programme period was on the old Dublin Road close to UL (part of the planned Smarter Travel 'Route 3') and included upgrades to a previously existing cycle and pedestrian path and some new shared sections.

Approximately 3.6km of traffic calming and junction upgrades were also delivered and aimed to improve existing cycling infrastructure in Rhebogue and Castletroy and thereby the safety of on road cycling.

Outcome of on-road cycling infrastructure

Feedback on the on-road cycling infrastructure was less positive than the greenway routes delivered. For example, the surfacing and signing of shared on-road walking and cycling facilities was perceived to be confusing and created conflict between users. In addition, some routes were not felt to be sufficiently well maintained and cyclists were reluctant to use them due to concerns about the potential for damage to their bikes or the risks of an accident. Other routes were criticised for not being continuous or for not linking to improved facilities in the Castletroy area. This created a view amongst some residents that cycling would only be considered a realistic alternative to driving if the entire journey could be made safely, rather than just part of it.

“The cycle lanes are stop start, it's not continuous. Sometimes it can be more dangerous to use them because you have to merge with the main road and the cars are coming so you have to stop”

– Image Group, Limerick

“They're trying to promote something where the infrastructure isn't in place so they're putting the cart before the horse. You can't expect a child to cycle on a main road just because there's a green initiative.”

– Parents Group, Limerick



Lessons Learnt

As shown in Limerick, and the other STAs, feedback on on-road cycling infrastructure is generally poor. Investment in on-road cycling infrastructure needs careful planning and design to ensure it responds to scheme objectives. Some lessons learnt in Limerick include:

- The design of shared use facilities, especially in areas of high travel demand, needs careful consideration and possibly warrants the involvement of local cyclists in the design process.
- Facilities that are not connected or do not make provision for cyclists at junctions are perceived as counterproductive to encouraging an increase in cycling.
- A more integrated plan for infrastructure delivery needs to be rolled out within specific geographical areas within a shorter timeframe.
- Once delivered, all facilities need to be continuously maintained to encourage consistent use and reliability.

END OF TRIP FACILITIES

Intervention Objectives

The key objectives of the trip end facilities were:

- To provide facilities such as secure cycle parking; and thereby
- To promote walking and cycling commuting.

Interventions Delivered

End of trip facilities delivered in the Limerick STA were mainly restricted to bike parking. The provision of bike parking within the Limerick STA was delivered through a number of initiatives as follows:

- **Increased bike parking in the city centre and UL:** Increased bike parking was rolled out across the city centre and UL in response to demand. In the city, bike corrals were installed on O'Connell Street and Thomas Street. At UL, a new bike hub was delivered which has been very well received. The hub consists of a fully enclosed glazed unit with 88 stands and a swipe card system for access;
- **Secure bike parking in the city centre:** Publicly available secure bicycle lockers and stands were installed in three locations in the city centre: the City Centre Car Park on Anne St, Howley's Quay Car Park on Henry St and the Denmark St carpark. The lockers are free to use, requiring only a €1 coin to operate, as with a shopping trolley the coin

is returned when the locker is opened. Each parking location is accompanied by a bike pump, a maintenance stand and simple tools;

- **Community Bike Stand Programme:** This initiative was developed to enable the community to identify locations where safe bike parking is required. As a result, over 150 bike stands were introduced in local centres such as Annacoty Village and attractions such as the Milk Market;
- **Promotion of 'Parklets':** The LST team ran the 'Do the Right Mix' campaign with the aim of encouraging businesses to regain access to on-street car parking and convert them to picnic pods, extended café areas, bike parking, book stalls or any other use. The initiative aimed to improve liveability and reduce the dominance of cars in the city;
- **Mobility Management:** Through the review of mobility management at participating LST workplaces, the LST team made recommendations for improvements to parking as well as other trip end facilities in workplaces; and
- **Schools:** As part of the School Travel Programme, the LST team made recommendations for improvements to parking as well as other trip end facilities in schools.



Outcome of End of Trip Facilities

Improvements in trip end facilities were well received in the city centre and UL. Bike parking delivered in the city, particularly the secure parking, experiences a consistently high level of demand of approximately 70% occupancy.³⁴ Similarly, at UL the increased parking provision was well received by staff and students. There was a 105% increase in the number of bikes parked at the Stables Student Centre from 2012 to 2016 which warranted investment on additional facilities.

Despite the positive feedback in terms of bike parking occupancy, research participants still highlight the need for more secure parking. This is largely on the basis that increasingly, and possibly owing to the Bike to Work Scheme, people are purchasing more expensive bikes which they don't feel confident parking at on-street facilities. Bike theft was noted as an issue during the research and something that participants felt should be tackled.

³⁴ Based on parking occupancy surveys undertaken each April and October 2013-2016

The cycle hire scheme available in the city centre, although not funded through Smarter Travel, has been welcomed at a theoretical level by research participants and is perceived as a positive intervention to help promote cycling in Limerick. However, at a practical level, the facility is open to criticism as there is a feeling that there is insufficient dedicated cycling infrastructure to support it.

“I think it’s a good idea but there should be some cycle lanes because tourists or novices will hire those bikes and you don’t have to wear a helmet so it’s a fantastic system but there’s no infrastructure to support it”

— Image Group, Limerick

Lessons Learnt

Lessons learnt in Limerick in relation to the provision of trip end facilities include:

- Community involvement in the identification of trip end facility requirements fosters buy-in and is an effective way of responding to community needs; and
- More secure bike parking needs to be delivered and widely promoted.

5.4.3.1 Summary of Infrastructure Outcomes

There is evidence that some of the infrastructure delivered in Limerick has been well received by the local community. Among the HTS respondents who are walking and cycling more than a year ago, one of the most common reasons for change was the improved, safer facilities, cited by 19% of those walking more and 15% of those cycling more.

The limited increase in cycling mode share across the LSTA of 0.9pp, despite a larger increase in walking, is likely for a number of reasons as follows:

- Most of the greenway infrastructure was only officially opened at the end of 2016 and therefore it is likely there has not been sufficient time to influence travel patterns and attitudes before this evaluation;
- Bike ownership in Limerick at 0.81 per household in 2016 is significantly lower than the national average of 1.15. Although the level of bike ownership has increased from 0.64 in 2012, it is still relatively low possibly owing to a lack of cycling culture in the city and a higher proportion of the community from lower socio-economic groups;
- Perceptions of cycling safety in Limerick are still low. High traffic volumes means that significant additional improvements to on-road infrastructure and traffic management would be required to improve perceptions of safety. A number of high profile fatal collisions involving cyclists within the LST area over the STA programme period may also have

exacerbated negative views on safety; and

- The perceived attractiveness of cycling in Limerick is significantly higher among cyclists than non-cyclists. Non-cyclists have a low perception of the amenity offered to cyclists and recent improvements in infrastructure have not impacted the views of non-cyclists. For example, there was a 23pp increase in the proportion of cyclists that rate cycling in their area as ‘pleasant’ from 61% in 2012 to 84% in 2016. However, despite infrastructure investment, there has been very limited change in the perception

of the cycle network by non-cyclists with the perception of ‘pleasantness’ increasing just 4% since 2012 to 60%. This indicates that more awareness and marketing of the new facilities is required to influence modal choice.

Changes in mode share are also closely linked with the LST behavioural change programme set out in the next section.



5.4.4 Behavioural Change Investment Outcomes

Behavioural change investment in Limerick was intended to improve the image of Smarter Travel modes, encourage modal shift among employees and improve parent confidence in walking and cycling trips to school. Spend on these elements represented 23% of the total STA budget (incl. additional funding), and includes investment in the measures and other project costs such as salaries. The main initiatives put in place to deliver these objectives were as follows:

- Schools Programme;
- Workplace Programme; and
- Community Programme.

The scope and outcomes of these measures are outlined below, presenting the following information:

- Intervention objectives;
- Interventions delivered;
- Outcomes and impacts, focusing on the contribution narrative; and
- Lessons learnt in terms of transferability and scalability.

SCHOOLS PROGRAMME

Intervention Objectives

The objective of the LST School Travel Programme is to:

- Encourage more sustainable travel modes of travel to school in Castletroy and Limerick City.

Interventions Delivered

The Schools Programme was initiated in February 2013 and was developed to target 30³⁵ schools across the Limerick STA. The programme accounted for the largest proportion of behavioural change investment, after salaries, and was delivered in partnership with the An Taisce Green Schools Programme.

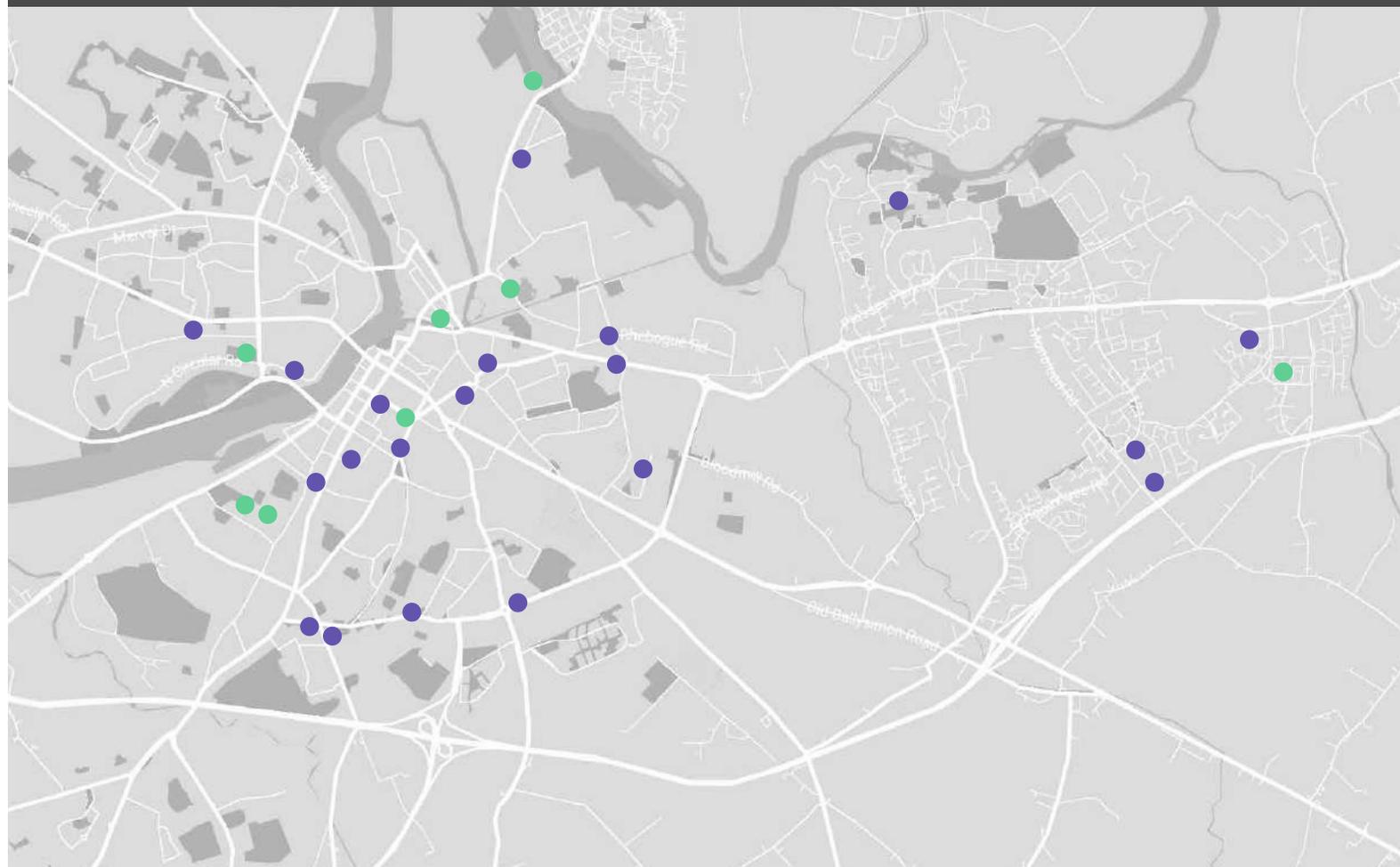
Schools were selected on the basis of population size and proximity to other schools and were grouped into 8 school clusters. The clusters are shown in Table 5.11.

TABLE 5.11: PARTICIPATING LST SCHOOLS

School Hub	Targeted Schools
Castletroy (3 Primary, 1 Secondary)	Castletroy College, Monaleen NS, Gaelscoil Chaladh an Treoigh, Milford Grange NS
N Circular Road (1 Secondary, 2 Primary)	Ardscuil Ris Secondary, Salesian Primary School (<i>amalgamated with Salesian Infant School Sept 2016</i>) JFK
S Circular Road (2 Primary, 3 Secondary)	Clements Secondary School, Limerick School Project NS, An Modhscoil, Laurel Hill Colaiste, Laurel Hill FJC Secondary
City Centre (1 Secondary)	Gaelcholaiste Luimnigh
Sexton Street (2 Secondary, 3 Primary)	Nano Nagle Secondary, Maria King Presentation, St. Michaels Infants, Scoil Iosagain, Colaiste Mhichil
Corbally (2 Secondary, 1 Primary)	Scoil Ide National School, St. Munchins College, Ardscuil Mhuire Secondary
Limerick City East (4 Primary)	St. Brigids NS, St. Patricks BNS, St. Patricks GNS, St. John Baptist GNS & Infant Boys
Regeneration (1 Special, 4 Primary)	Our Lady Queen of Peace, Our Lady of Lourdes, Le Cheile NS, Gaelscoil Sheoirse Clancy, Mid-West School for Hearing Impaired Children.

³⁵ Target reduced from an initial estimate of 50 schools

FIG 5.16: PARTICIPATING LST SCHOOLS



- SMARTER TRAVEL PRIMARY SCHOOL
- SMARTER TRAVEL SECONDARY SCHOOL



The Schools Programme encompassed a wide range of activities including:

- The programme was focused heavily on delivery of events and challenges to promote sustainable travel such as: Walking Bus development support and promotion, Park and Stride promotion, WOW (Walk on Wednesday) and COW (Cycle on Wednesday) Days, Bus in the City (public transport promotion and awareness), Bike Repair Days, Smarter Travel Art Competitions, National Cycle to School Day and Road Safety promotion;
- Walkability audits to ascertain the quality of the local walking environment and suggest proposals for improvements to the local authority infrastructure and road safety teams;
- Cycle training, scooter training and bike repair workshops;
- Mapping of student distribution to demonstrate appropriate options for sustainable travel to school; and
- Promotion of the benefits of sustainable school travel at broader community based Smarter Travel events such as the BeSpoke Festival.

Smarter Travel was formally integrated into the CSPE (Civic Social and Political Education) curriculum in some secondary schools, with a number of classes completing Junior Certificate CSPE projects aimed at promoting different aspects of smarter travel to their fellow pupils.

Outcome of the Schools Programme

The impact of the Schools Programme has been assessed through an analysis of Census data from 2011 and 2016 on pupils' usual mode of travel to school, as well as through baseline and follow-up surveys within schools and qualitative research with parents and teachers.

Using the Census data, changes in mode share amongst school pupils resident in the Limerick STA as a whole can be compared against changes in a comparison area within Limerick (areas to the west and south of the city which were outside the STA boundaries), as well as within the Castletroy hub. Overall the results suggest that any modal shift for trips to school has been very limited. There is no evidence of a shift to sustainable modes amongst primary school pupils, as private car mode share increased in Limerick STA (+3.5pp) and Castletroy (+3.1pp), while there was a small decrease (-1.1pp) in the Limerick Comparison area. The increase in car mode share at primary level was accompanied by a decrease in walking mode share. However, at secondary school level, the Census data shows that there has been increases in walking in both Limerick STA (+1pp) and Castletroy (+2.1pp), which is in contrast to the decline in walking mode share in the comparison area (-5.1pp).

School travel surveys which were undertaken at participating primary and secondary schools provide a secondary source of data on modal shift. The combined results of the school travel surveys in primary schools show a decrease in the mode share of car and 'Park and Stride' (PAS) combined of 5pp, from 64% to 59%, as well as an increase in the mode share of walking

(+1.8p) and cycling (+2pp). At secondary level, the surveys showed an increase in the combined mode shares of car and PAS (+1pp) as well as a decrease in the mode shares of walking (-0.7pp) and cycling (-0.8pp). Therefore, the school travel survey results present a more positive picture of changes in travel patterns of primary school pupils in comparison to the census. At secondary level, changes in mode share are smaller in both datasets, but the census results present a slightly more positive picture.

Caution is generally advised when interpreting the results of self-reported surveys of children due to the possibility of response bias. In addition, for some schools there was some seasonal variation in the months when baseline and follow up surveys were undertaken, which may have had an impact on the results.

Feedback from parents with children attending the participating LST schools indicates that the programme is perceived as positive and is broadly welcomed. The main factor determining mode of travel for the school trip is safety. Even in Castletroy, where the majority of infrastructure improvements have been delivered, the facilities are still not perceived as suitable for use by unaccompanied children. Many parents will not allow their children to use cycle lanes adjacent to busy roads with no segregation from the traffic. Where segregated facilities are available, the junction with on-road facilities raises concerns.

TABLE 5.12: USUAL MODE OF TRAVEL TO PRIMARY SCHOOL (CENSUS 2011 – 2016)

	Limerick STA		Limerick Comparison Area		Castletroy	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	62.1%	3.5	57.4%	-1.1	73.2%	3.1
Walk	33.3%	-3.0	36%	0.2	20.7%	-4.5
Cycle	1.0%	0.1	0.9%	0.2	1.6%	0.7
Bus/Rail	3.5%	-0.5	5.5%	0.6	4.5%	0.7
Other	0.2%	0.0	0.2%	0.1	0.1%	0.0
Total (n)	4559		4141		1300	

TABLE 5.13: USUAL MODE OF TRAVEL TO SECONDARY SCHOOL (CENSUS 2011 – 2016)

	Limerick STA		Limerick Comparison Area		Castletroy	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	46.9%	1.6	47.4%	3.8	49.6%	-1.4
Walk	33.9%	1.0	28.8%	-5.1	40.4%	2.1
Cycle	3.9%	0.3	1.3%	-1.6	1.6%	-0.7
Bus/Rail	15.2%	-2.6	22.2%	2.8	8.3%	0.6
Other	0.2%	-0.2	0.3%	0.0	0.1%	-0.6
Total (n)	3002		2845		793	

Lessons Learnt

“I have always driven my kids to school but this year I made a decision we would try to get there another way and we have pretty much stuck to that. They want to be driven but it makes them feel a little better if I join in and cycle or walk with them.”

– Parents Group, Limerick

“My nine year old would love to cycle to school but we can't let him because the cycle path runs straight into the main road.”

– Parents Group, Limerick

Key lessons learnt from delivery of the Schools Programme in Limerick, including feedback from the School Programme delivery team, are as follows:

- There is limited evidence that behavioural change interventions have influenced behavioural change for the school trip in the Limerick STA. At secondary school level, the census results show a small decrease in car mode share in Castletroy. At primary school level, school travel survey results show some positive modal shift, but this is not reflected in the census results which show an increase in car mode share.
- Approaches to promoting sustainable travel in secondary schools which were focused on ‘peer to peer influence’, such as involving second and third year students in organising smarter travel events as part of their CSPE ‘action project’ were well received, as documented by the LST schools team in annual progress reports.
- A bespoke programme for each school needs to be developed to ensure it addresses varying travel needs and the local infrastructure and environment.
- The weight of school bags and equipment is a major barrier to the promotion of sustainable travel and requires support from the Department of Education to resolve.
- Schools with a strong level of support from principals and teachers and with access to good facilities for walking and cycling are likely to perform better and experience a higher level of modal shift.
- Many students in Limerick are enrolling at schools outside walking/cycling catchments of their home to avail of better facilities. As a result, the increasingly long travel distances means that sustainable travel is not a feasible option for many students and increases the likelihood of the school trip being made by car.
- Many schools and teachers face heavy workloads and do not have the capacity to promote Smarter Travel in a meaningful way without external support.
- The timing of delivery of behavioural change measures in schools needs to be sensitive to the quality of local walking and cycling infrastructure.
- Promotion of Smarter Travel in schools is resource intensive and requires specialist skills with an interest and experience in targeted delivery of behavioural change tools and monitoring.



WORKPLACE PROGRAMME

Intervention Objectives

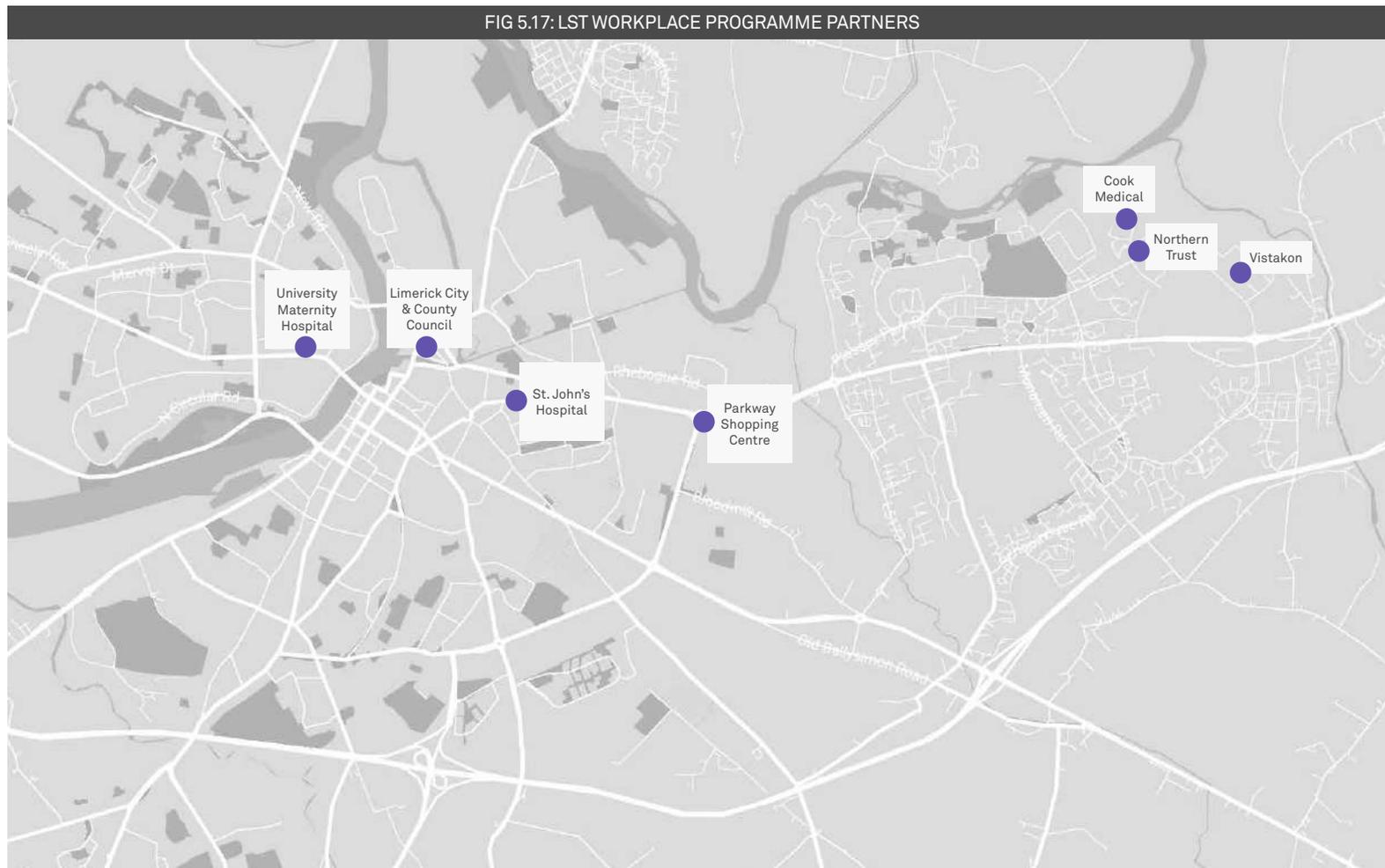
The main objectives of the Smarter Travel Workplace Programme were to plan and deliver sustainable transport initiatives that target employees with the aim of:

- Decreasing car travel;
- Reducing parking demand;
- Improving the travel options available to employees; and
- Increasing the environmental credentials of partner organisations.

Interventions Delivered

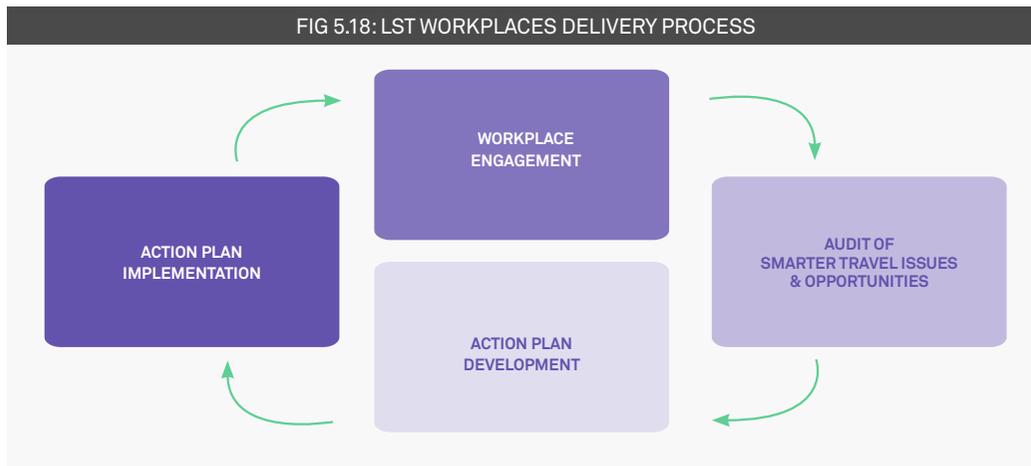
To implement the LST Workplace and Campus Programme, an LST workplace coordinator was appointed and worked closely with the coordinators of the national Smarter Travel Workplace Programme which is run by the National Transport Authority (NTA). Seven³⁶ organisations had signed up as partners on the programme by 2017, with a combined ~8,000 employees, as follows:

- Limerick City and County Council (1,100 employees);
- St. John's Hospital (300 employees);



³⁶ LST have noted that during the STA programme, the workplace programme was confined to organisations based in the identified programme area and that as the STA programme has now come to an end they are now in discussion with other large organisations outside the area with the hope of further expanding

FIG 5.18: LST WORKPLACES DELIVERY PROCESS



- Parkway Shopping Centre (250 employees);
- Cook Medical (800 employees);
- Vistakon (1,400 employees);
- Northern Trust (700 employees); and
- University of Limerick Hospitals Group (~ 2,700 employees across five sites in Limerick, Croom, Ennis and Nenagh).

These workplaces were offered various supports from the LST/NTA team to achieve the programme objectives, including site-specific advice and information, online travel survey and analysis, mapping resources and access to the NTA walking and cycling challenges. A number of key delivery steps are common for all organisations as summarised in Figure 5.18. Following engagement with employees, bespoke Action Plans are prepared that recognise the unique issues and opportunities for Smarter travel presented at each workplace. Throughout implementation of the Action Plan, engagement with employees is maintained to gain feedback

on the impact of measures being delivered and identify opportunities for further improvement. Partner organisations are encouraged to set up an Action Plan Working Group and appoint an Action Plan Coordinator to lead implementation of the agreed delivery plan.

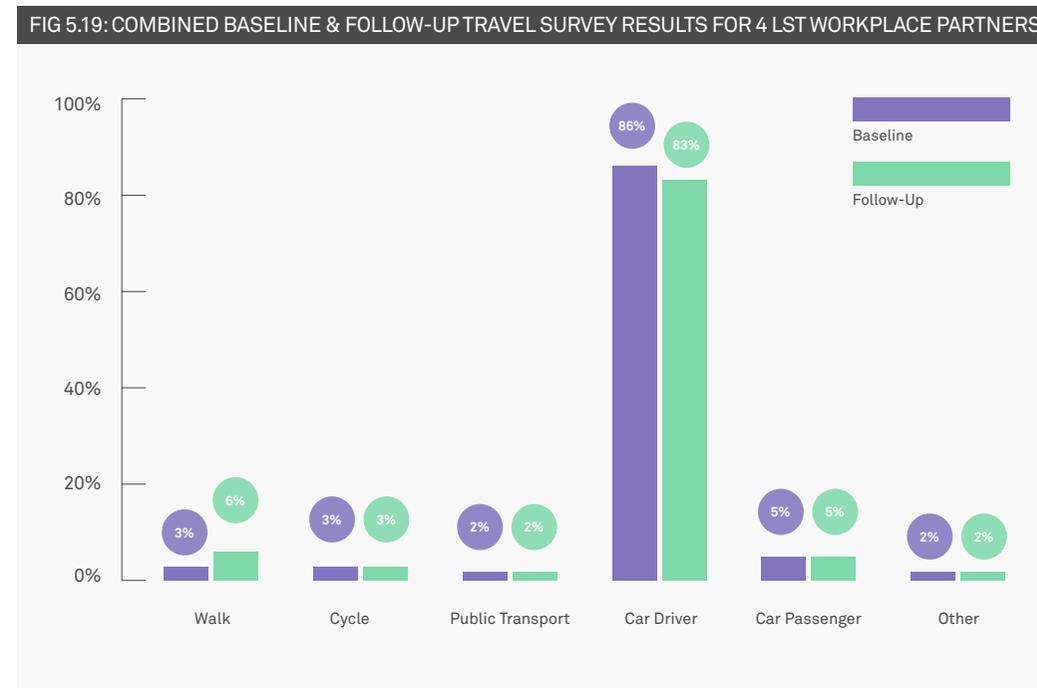
During each year of the programme, a roundtable event for all partners was held to give an opportunity for partners to learn from the experiences of other organisations. This event also allowed the group to collectively provide feedback on local public transport services and on walking and cycling routes to the local authority and the NTA. More regular round table sessions were also held for partners in the Castletroy area, where there is a cluster of participating organisations. Feedback from workplace coordinators is that these sessions have been extremely useful in terms of knowledge sharing and collaboration.

Outcome of the Workplace Programme

The impact of the Workplace Programme has been determined through baseline and follow-up surveys within the workplaces as well as focus groups with commuters. Combined results of the baseline and follow-up travel surveys available for four of the participating workplaces are presented in Figure 5.19 below. At this combined level, car mode share fell by 3pp while walking mode share increased by 3pp and there was no significant change in cycling recorded. This level of modal shift reflects the changes within the 2012-2016 HTS. The level of change experienced across the different workplaces varied. Car mode share reduced by between -2.8pp and -5.5pp at three of the four workplaces and walking increased at three workplaces, by between 0.5pp and 5.3pp.

Another impact of the LST Workplace Programme has been the increased awareness of the Smarter Travel programme more generally. For example, intercept surveys at family events found that some participants had heard about the event through the work. Therefore, it seems likely that the workplace programme may have contributed to achieving the positive changes in attitudes towards Smarter Travel modes which were recorded in the HTS.

FIG 5.19: COMBINED BASELINE & FOLLOW-UP TRAVEL SURVEY RESULTS FOR 4 LST WORKPLACE PARTNERS



“They’ve come into our place a couple of times to promote it, to make us aware of the cycle lanes in the area and promoting cycling in general.”

–Commuter, Limerick

A number of barriers to achieving modal shift were identified by Smarter Travel Coordinators in participating workplaces. These are likely to have impacted the level of change observed in travel surveys to date and include a combination of factors both internal and external to the workplace itself. These include:

- Poor perception of cycling safety;
- Many sites not well served by public transport;
- High proportion of employees are travelling long distances;
- A need for improved facilities within the workplace (e.g. showers); and
- Busy schedules of staff sometimes don't allow active travel.

Lessons Learnt

Lessons learnt from delivery of the Workplace Programme, including feedback from the Smarter Travel Workplace Team, are as follows:

- Workplace travel planning in Limerick has raised awareness of Smarter Travel amongst employees in participating organisations and is likely to have impacted modal shift recorded through workplace surveys.
- While raising awareness and promotion of Smarter Travel in the workplace has proven to be effective, it should be complemented by investment in on-site facilities which enable and support adoption of the new travel choice.
- A comprehensive supporting layer of initiatives, such as cycle training, would be beneficial in helping employees to overcome practical barriers to modal shift.
- The success of workplace travel planning is very dependent on the commitment of the organisation involved and the extent of internal resources made available to support it.
- The planning process should be used as a better means of introducing and enforcing Smarter Travel, especially at large new/ expanding premises.
- Promotion of Smarter Travel in workplaces is resource intensive and requires specialist skills with an interest and experience in targeted delivery of behavioural change tools and monitoring.

CAMPUS PROGRAMME

Intervention Objectives

The main objective of the Smarter Travel Campus Programme was to plan and deliver sustainable transport initiatives that target students and employees with the aim of:

- Decreasing car travel;
- Reducing parking demand;
- Improving the travel options available to students and staff; and
- Increasing the environmental credentials of partner campuses.

Interventions Delivered

Three third level institutions and two further education campuses have engaged with the LST Campus Programme to date, as follows:

- Limerick College of Further Education (2,200 students, 160 employees – divided into day and night);
- The University of Limerick (UL) (1,300 employees, ~13,000 students);
- Mary Immaculate College (MIC) (300 employees, ~3,200 students);
- Limerick Institute of Technology (LIT) (600 employees, ~7,000 students); and

- Limerick and Clare Education and Training Board, Further Education and Training Centre (Kilmallock Road).

UL was the first campus in Limerick to engage with the Campus Programme, having been involved as part of the LST team from the initial bidding stages. A portion of STA funding was allocated to the delivery of infrastructure and behaviour change measures at UL, alongside match funding provided by UL. In comparison to UL, more limited resources have been made available to date at the other four campus partners. Some examples of initiatives which have been delivered with the support of LST and the NTA Smarter Travel Campus programme include the launch of a Smarter Travel Working Group at LIT and the launch of Smarter Travel Awareness Week at LCFE.

Two dedicated Smarter Travel co-ordinators were employed at UL to run the behavioural change campaign on campus. LST was also supported in delivering the workplace and campus programme by the NTA Smarter Travel Campus team. Key components of the Campus Programme included events and challenges, staff and student travel surveys and the integration of smarter travel into 3rd level curricula.

Behavioural change initiatives have been running at UL since 2013, including:

- Promotion of Smarter Travel through information, maps and merchandise;
- Provision of travel advice to new students;

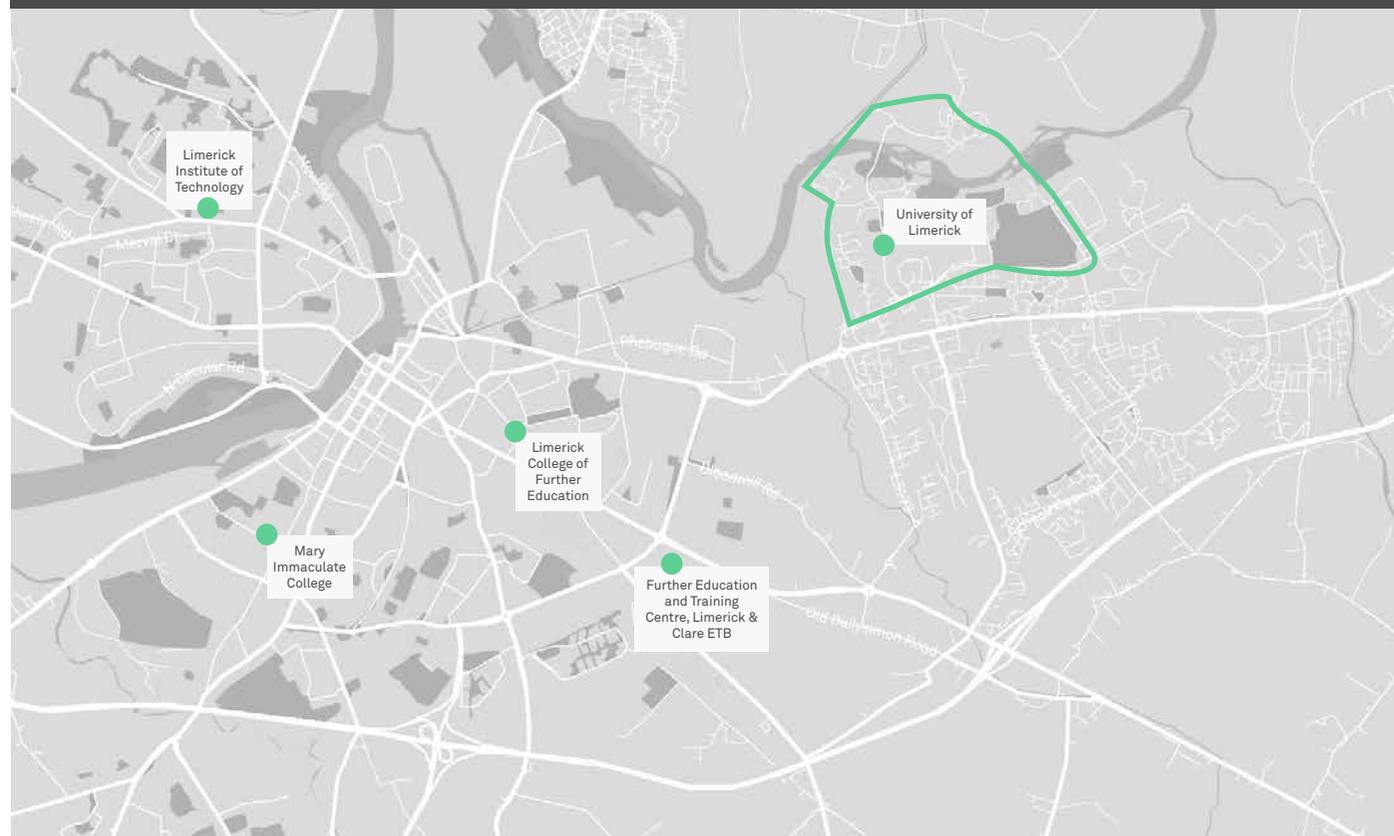
- Promotion of national events such as the ‘Marchathon’ Step Challenge and the Student Cycle Challenge;
- Free bike maintenance through the ‘Bike Doctor’ service;
- Provision of low cost bikes that can be sold back at the end of term; and
- Integration of Smarter Travel into the curriculum of a number of faculties including Civil Engineering, Product Design and Physical Education and Sports Science.

The ‘Bike Doctor’ service is perceived by the programme coordinators as the most successful measure implemented as it is well attended by students and helps to overcome the barrier of travelling to a bike shop for small repairs. The ‘First Seven Weeks’ campaign has also proved very beneficial as it is delivered at a crucial time when new students, who are not yet familiar with the best ways of getting around are briefed on walking, cycling and public transport routes and information.

Delivery of behavioural change measures at UL were accompanied by improvements in infrastructure as well as reductions in parking provision and tighter controls.

UL has been awarded numerous NTA Smarter Travel Campus awards for the measures taken on-campus to reduce car dependency. These include ‘Smarter Travel Campus of the Year’ and four other awards in 2015 as well as both ‘Walking Campus of the Year’ and ‘Cycling Campus of the Year’ in 2017.

FIG 5.20: LST CAMPUS PROGRAMME PARTNERS





Outcome of the Campus Programme

The impact of the Campus Programme at UL has been determined through analysis of Census data on trips to third level education; baseline and follow-up surveys undertaken among students and staff in UL, traffic count data close to the campus and focus groups with students and staff. As the three remaining participating campuses have only recently become engaged in the Programme, travel survey information is only reported for UL.

Using the Census data, changes in mode share for trips to third level education amongst students resident in the Limerick STA, in Castletroy (within the STA) and within the Limerick Comparison Area have been analysed. The data presented includes residents of these areas attending all third level institutions and not only UL, but as UL is the largest institution, a majority of the sample is likely to consist of UL students, particularly in the Limerick STA and Castletroy. Within the Limerick STA, car mode share for the trip to third level education reduced by 7.3pp between 2011 and 2016, while walking, cycling and public transport mode share increased. A slightly larger change occurred in Castletroy, where car mode share fell by 8.3pp and larger increases in the mode shares of walking (+4.7pp) and cycling (+2.7pp) were recorded in comparison to the change in the Limerick STA as a whole.



TABLE 5.14: USUAL MODE OF TRAVEL TO THIRD-LEVEL EDUCATION (CENSUS 2011 – 2016)

	Limerick STA		Limerick Comparison Area		Castletroy	
	2016	PP Change from 2011	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	30.3%	-7.3	41.5%	1.0	25.1%	-8.3
Walk	48.4%	2.0	32.7%	-4.8	58.6%	4.7
Cycle	8.0%	1.9	3.8%	0.0	9.4%	2.7
Bus/Rail	12.8%	3.9	20.7%	3.6	6.4%	1.3
Other	0.6%	-0.4	1.2%	0.2	0.5%	-0.5
Total (n)	3602		2294		2033	

Staff and student travel surveys were undertaken at UL in 2011 and each year between 2014 and 2017, as summarised in Figure 5.21 and 5.22. Results of student surveys demonstrate that ‘car driver’ mode share decreased by 6.4pp from 29.4% in 2011 to 23.0% in 2017. This

decrease was accompanied by an increase in car passenger mode share of 2.8pp. Cycling increased by 4.5pp from 6.6% in 2011 to 11.1% in 2017 while there was an increase of 2.6pp in walking from 46.2% in 2011 to 48.8% in 2017. These results are supported by the HTS results which demonstrate a cycling mode share (for independent education trips) of 10.9% in 2016 (increase of 3.7pp since 2012).

Among staff, there was a reduction in car mode share of 3.5pp from 75.9% in 2011 to 72.4% in 2017. There were minor increases in walking (+1.2pp), bus (+1.9pp) and cycling (+1pp).

Counts of cyclists within the Castletroy area from October 2012 to October 2016 support the findings of the UL travel surveys by demonstrating an increase in cyclist volumes across the STA evaluation period as shown in Figure 5.23. However, the 2016 HTS showed a decrease in cycling mode share for independent education trips since 2014 which demonstrates that there is potential for a further increase. The recent decrease could be related to increased traffic in the area which acts as a deterrent to cycling as well as the fact that delivery of the behavioural change campaign in UL was at its peak in 2014.



FIG 5.21: UL STUDENT TRAVEL SURVEY RESULTS, 2011 TO 2017

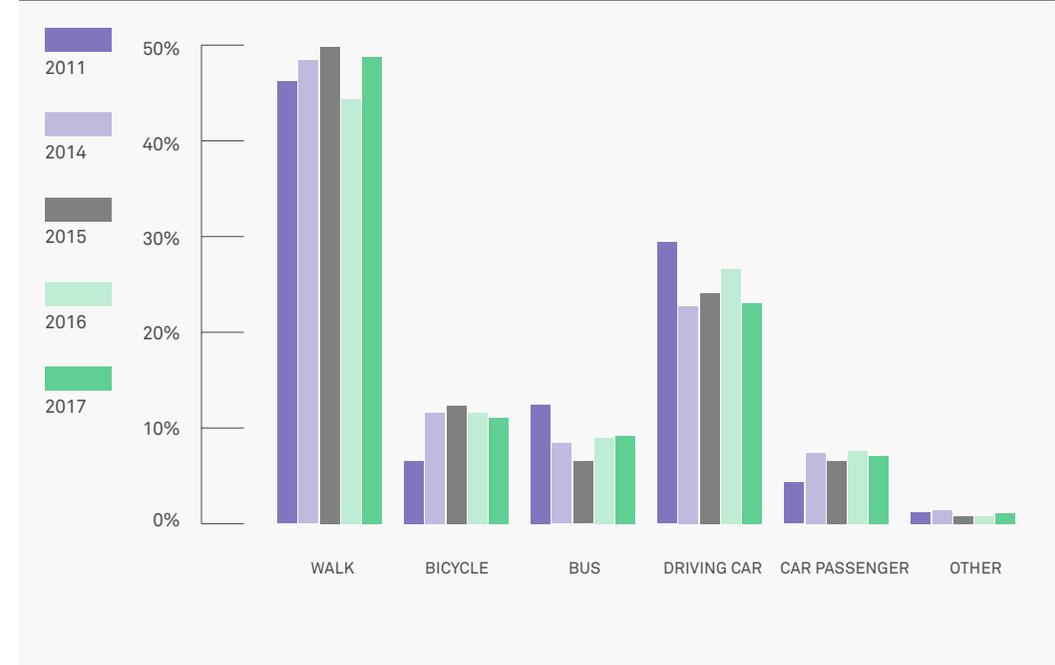
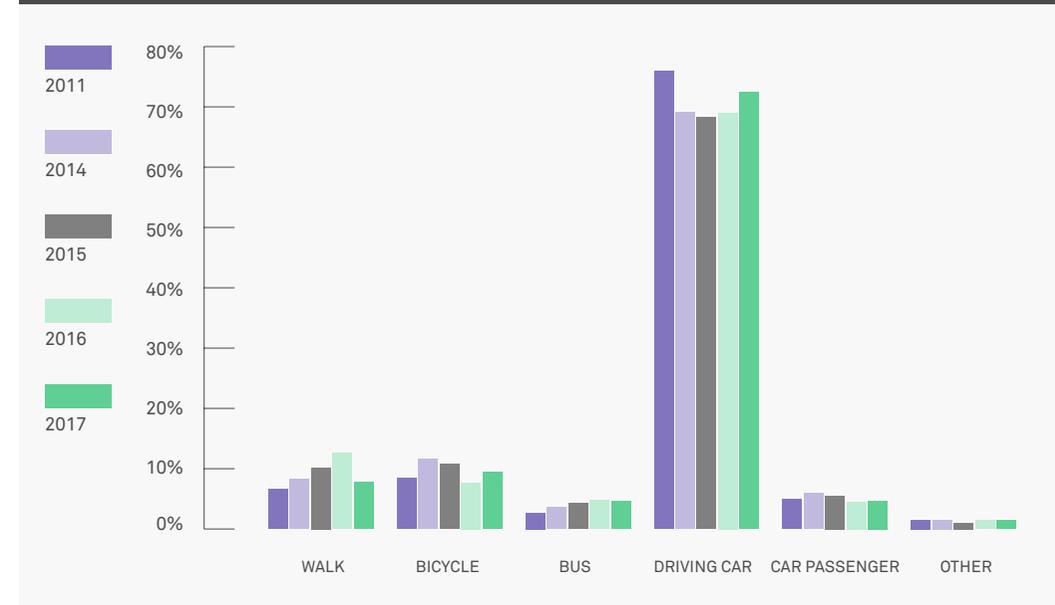


FIG 5.22: UL STAFF TRAVEL SURVEY RESULTS, 2011 TO 2017



Lessons Learnt

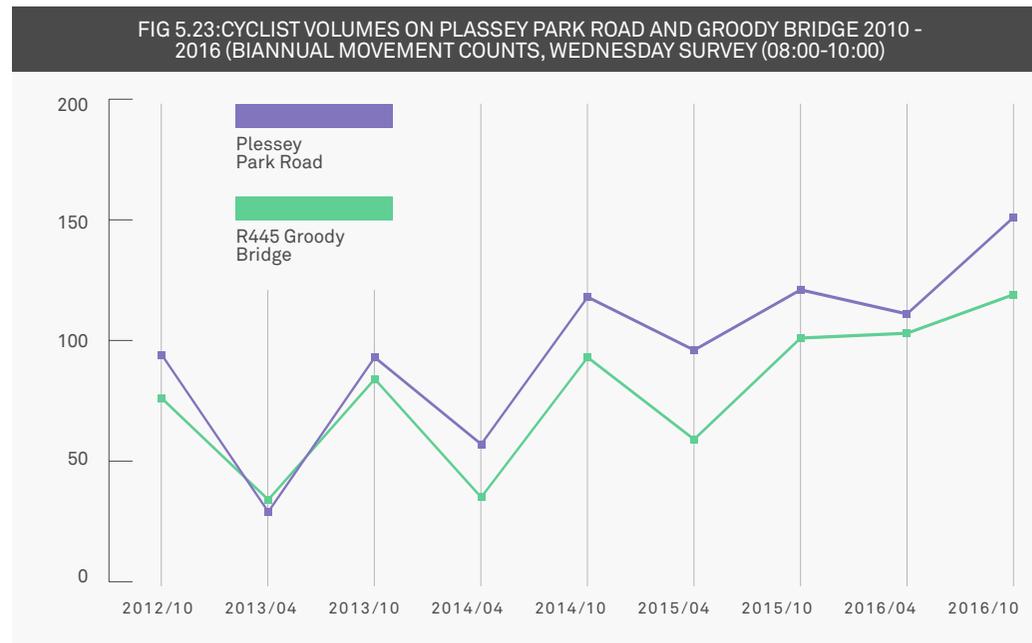
Qualitative research has also provided information on outstanding barriers to modal shift at UL which are likely to have impacted results achieved to date. These are similar to the barriers to modal shift for other trip types and include: a perception that certain parts of the UL campus are poorly lit at night; a perception that cycling infrastructure is poorly designed and/or poorly maintained; conflict between cyclists and pedestrians on cycle paths; a perception that cycling has a negative image and the status and convenience attached to driving.

“Pedestrians don’t move out of the cycle paths. Cyclists come down and ring their bells and people are going ‘oh, whatever’ and they just keep walking”

—Students Focus Group, Limerick

Lessons learnt from delivery of the Campus Programme, including feedback from the Smarter Travel Campus Team, are as follows:

- Delivery of campus programmes needs to leverage from a wide range of campus stakeholders such as the Students Union, facilities management, HR, visitor centres, clubs and societies etc.
- For campuses with no on-site bike shop, the provision of a free bike repair service is an effective way of ensuring that minor bike repair issues do not prevent people from cycling.
- Maintenance Repair Workshops are a useful means of equipping students (and staff) with the skills needed to make minor bike repairs.
- Promotion of Smarter Travel on campuses is resource intensive and requires specialist skills with an interest and experience in targeted delivery of behavioural change tools and monitoring. Depending on the size of the campus, dedicated staff are required to deliver campus programmes, as opposed to integrating the role as part of other existing roles.
- Targeting behavioural change among students at the beginning of the college term is most likely to impact behavioural change.
- Team challenges are a cost effective and positive means of influencing modal shift.



COMMUNITY PROGRAMME

Intervention Objectives

The main objective of the Community Programme is to:

- Spread the message of Smarter Travel at a grassroots level; and thereby
- To encourage modal shift away from private car use.

Interventions Delivered

The Community Programme incorporated a wide range of activities, summarised as follows:

- **Events:** The most significant regular events organised by LST took place during National Bike Week, which was branded as the BeSPOKE Festival. The main event each year was a weekend family cycle along the greenway which was attended by up to 1,200 people.³⁷ Other aspects of the Festival included challenges within workplaces and schools, road safety promotion, bike theft campaigns, cycle training and bike repair events. Grant funding was also provided to local communities interested in hosting their own events which included community cycles, bike maintenance classes and cycle skills training. Other key events on the LST calendar included: St Patricks Day Parade, European Mobility Week, International Earth Day and Limerick 2020 Street Party. The LST Team cooperated with the organisers of other events throughout the year in Limerick to promote 'Smarter Travel'. For example, the 'Pedal Power' event during the Limerick Pipe

Organ Festival aimed to promote walking and cycling as part of a tour of churches and organs around Limerick. The LST Programme also supported 'community owned' events and initiatives. For example, twelve members of the community attended a free accredited training course in bicycle maintenance, and in return each participant agreed to provide bicycle repair at events in their neighbourhood. Ten people from across Limerick were also trained to deliver the Cycling Ireland run 'Sprocket Rocket' programme to children and these new instructors delivered children's cycling skills training sessions at the Limerick Milk Market in partnership with the Sophie's Journey Foundation;

- **The Big Travel Action Challenge:** The 'Big Travel Action Challenge' (BTAC) was developed to encourage local communities to identify and address the barriers to Smarter Travel at a local level. Input from ten local communities was used to develop bespoke Community Travel Plans for each area. Where possible, the LST Team addressed some quick wins through the provision of cycle parking, cycle training and cycle maintenance classes. Communities are encouraged to identify travel actions that will engage the household, be sustainable, relatively inexpensive, and have the potential to be scaled-up, in order for it to be repeated in other households. Prize funding of €15,000 will be made available for delivery of the winning idea. The Challenge was still underway at the time of reporting;



³⁷ 1,200 was the estimated attendance in 2014, attendance figures for later years are not available

Outcome of the Community Programme

- **Travel Champions:** During the '20 Weeks of Change' Challenge, 30 champions for Smarter Travel were invited to participate in a trial whereby their experience of walking and cycling and its health impacts was monitored and documented. The Challenge was organised jointly by LST, UL and the Health Service Executive in the summer of 2013. More detailed information on the Challenge is presented in the Case Study below; and
- **Information and Awareness:** The Community Programme included a broad information campaign on social media and local print media, promotion at events, preparation and dissemination of a range of Smarter Travel branded materials including a detailed map of walking and cycling routes and opportunities and a comprehensive website.

The impact of events and the awareness campaign on behavioural change has been determined through both qualitative and quantitative research as outlined in the following sections. The impact of the Big Travel Action Challenge is not clear as it is still underway while the impact of the Twenty Weeks of Change Challenge is outlined in the case study shown below.

Despite significant promotional and marketing efforts by the LST team, the levels of awareness of Smarter Travel are lower in Limerick than in the other STAs. This is partly a reflection of the larger geographical area and population within the Limerick STA. The primary association of Smarter Travel among research participants tends to be with the Coca-Cola Zero Bike Scheme and campaigns implemented in the University/Castletroy area. Awareness of Smarter Travel was highest among UL students and staff which is unsurprising given the more focused marketing campaign delivered on the campus. Feedback from qualitative research also indicates that aspects of the Community Programme has improved awareness of Smarter Travel.

“Where I work they run bike workshops free of charge. A mechanic will service your bike and gives you all the safety bits and pieces.”

–Commuter Focus Group, Limerick



“They’ve come into our place a couple of times to promote it, to make us aware of the cycle lanes in the area and promoting cycling in general.”

–Commuter Focus Group, Limerick

“I saw this event advertised in Corbally so I brought my son in with his bike and we got it serviced so it was good.”

–Image of Smarter Travel, Focus Group, Limerick

The impact of events and challenges on modal shift has been determined through intercept surveys at events and through focus groups. Among all HTS respondents, 5% had attended a Smarter Travel event in the previous twelve months which demonstrates a reasonably positive outcome.

Surveys of participants at events organised by the LST team in 2016 and 2017 also provide positive feedback in relation to the potential for events to influence modal shift. Almost two thirds of respondents (63%) reported that the event would encourage them and/or their children to cycle more often in the future. However, a large proportion of people attending the events (81%) already cycle regularly for leisure purposes (at least once a week), while 41% of employed respondents cycle to work at least once a week. The survey also found that 58% of attendees had previously attended a Smarter Travel event and many reported that they had attended the same family cycle event

multiple times over the last number of years. These results indicate that while Smarter Travel events might have a positive impact on travel behaviour, they tend to attract the same segment of the community: regular cyclists. While all involvement in events should be welcomed, there needs to be more focus on segments of the community that present additional opportunity for modal shift.

Lessons Learnt

The main lessons learnt in Limerick were:

- There is evidence that the Community Programme has raised awareness of Smarter Travel in Limerick and that some aspects have encouraged increased walking and cycling.
- Events and awareness campaigns need to be developed and delivered in a more focused way to target segments of the community currently travelling by car and willing to take-up Smarter Travel.

CASE STUDY: TWENTY WEEKS OF CHANGE

Intervention Objectives

The main objectives of the Twenty Weeks of Change Challenge was to feature local people as Travel Champions a means of encouraging others to imagine themselves making similar changes to their travel patterns.³⁸

Interventions Delivered

The Twenty Weeks of Change Challenge was implemented in the summer of 2013 over 20 weeks with a group of volunteer 'Champions' who pledged to incorporate walking, cycling, car sharing and public transport into their daily routine for the period of the challenge and document their experience through social media. Their experience in terms of impact on physical and mental health was monitored and captured through social media.

Outcomes of Twenty Weeks of Change

In addition to the surveys undertaken among the participants throughout its delivery, a focus group with the participants was held in 2017 to understand its long term impact and whether the Challenge format presents an opportunity for further modal shift.

There is positive evidence that the challenge had a lasting impact on the travel patterns of participants. Respondents cited a range of benefits from participating, including increased fitness and confidence, increased energy and financial benefits from reducing their commuting costs. This is supported by evidence collated by UL Medical School who

were involved in monitoring the Champions with statistically significant improvements in both mental and physical wellbeing recorded five weeks after the end of the Challenge.

Participants also felt that others saw them as role models during the Challenge and felt they were able to influence others to change too.

“Seeing people making the effort in the workplace to cycle to work and get back into exercise. People in my workplace saw me cycling in and were encouraged to try cycle or walk their commute.”

–20 Weeks of Change LST Final Report August 2014

The main perceived benefit of participating was that it encouraged Champions to challenge their diets and lifestyles, with modal shift being an important but secondary impact. However, some participants reported that they had continued to cycle regularly after the 20 Weeks of Change Challenge, including one who took up cycling as a leisure activity for the first time.

“I enjoyed the cycling so much I went away and bought a proper bike and took it up as a hobby. We’ve got a cycling club at work so I go out a lot.”

–20 Weeks Group, Limerick



“I had a bike already and carried on cycling as much as I could, probably not to the same extent as during the 20 weeks but for the next two or three years or whatever.”

–20 Weeks Group, Limerick

A key feature of the Challenge was the use of social media which helped to raise the profile of Smarter Travel in a very cost effective way. The Champions took part in a documentary of their experiences and also featured in short films and a photo series at different stages in the campaign. These short films which portray an attractive image of real people using smarter travel modes in Limerick were released on social

media and the challenge also received a lot of feedback on social media.

The need for manual reporting of travel patterns was identified as the weakness of the Challenge by participants who felt this to be tedious and commented that the process of logging physical activity could automated

³⁸ This is based on the behavioural change principle of 'social proof' as defined by Dr Robert Cialdini's six principles of persuasion (Influence: The Psychology of Persuasion, 1984).

Lessons Learnt

through an app. In addition, participants outlined the need for regular contact and encouragement throughout the Challenge.

“Keeping records now is as untrendy now as it was 1,000 years ago. Maybe they should have programmed the iPads to do your diary every day or to have an app that you tap and that’s it, it’s done with no writing.”

–20 Week Group, Limerick

“The monitor you had to wear for a while was awkward. It was very clunky and really awkward and I think I had to wear it for two weeks.”

–20 Weeks Group, Limerick

“I was disappointed because there was no feedback. There was a before and after element and I did the fitness exercise again at the end but I heard nothing back so it was a bit of a let-down.”

–20 Weeks Group, Limerick

The main lessons learnt in Limerick were:

- The format of the 20 Weeks of Change Challenge could easily be replicated elsewhere and is a cost-effective means of promoting sustainable travel.
- Improved technology is required to make Challenges easier to deliver and, importantly, enhance the user experience to support participation.
- A targeted marketing programme and intensive engagement with participants is needed in order to maximise effectiveness.



5.5 Conclusions: Impact of Smarter Travel in Limerick

Evaluation of the Limerick Smarter Travel programme has demonstrated that modal shift observed has been impacted by the Smarter Travel Investment in both infrastructure and behavioural change measures. A summary of modal shift at a trip level and the key factors contributing to change are summarised in Table 5.15. The Logic Map shown in Figure 5.24 provides an update of programme delivery in Limerick; only programme measures which have been fully delivered are included in the map.

The HTS results show slight but positive impacts on modal shift which are higher in the LST area than changes experienced within the control sample. Car mode share for all trips reduced by -2.7pp to 64% in 2016 with an increase of +4.1pp in walking and +0.9pp in cycling. Changes were observed across all trip types including employment trips, escorted education and non-commuting trips. Results of the 2016 Census demonstrate that a higher level of modal shift occurred within the Castletroy area, where a large proportion of Smarter Travel funding was invested.

Based on the trends highlighted in Dungarvan, where evidence of modal shift came several years after improved infrastructure was put in place, additional monitoring will be required in Limerick in the coming years to ascertain the impact of recently delivered infrastructure.

Longer travel distances in Limerick for both employment and education trips means that walking and cycling are often impractical which may have limited the potential for modal shift. Despite this, there is evidence that fewer short trips were being made by car in 2016 compared with 2012. The proportion of trips being undertaken by car decreased across all distance bands with the exception of the longest band, 8km+. More people are choosing to walk for trips of 4km or less and there has been an increase in the proportion of cycling trips between 4-6km.

Census data also showed that private car use fell significantly for third level education trips, with a reduction of -7.3pp reported in the STA and -8.3pp in the Castletroy area. This can be attributed to the delivery of infrastructure in the Castletroy area as well as behavioural change initiatives in UL. These combined measures have resulted in an improved image for Smarter Travel and contributed to modal shift; with the car mode share reducing by 3.0pp for escorted education trips and 4.3pp for independent education trips.

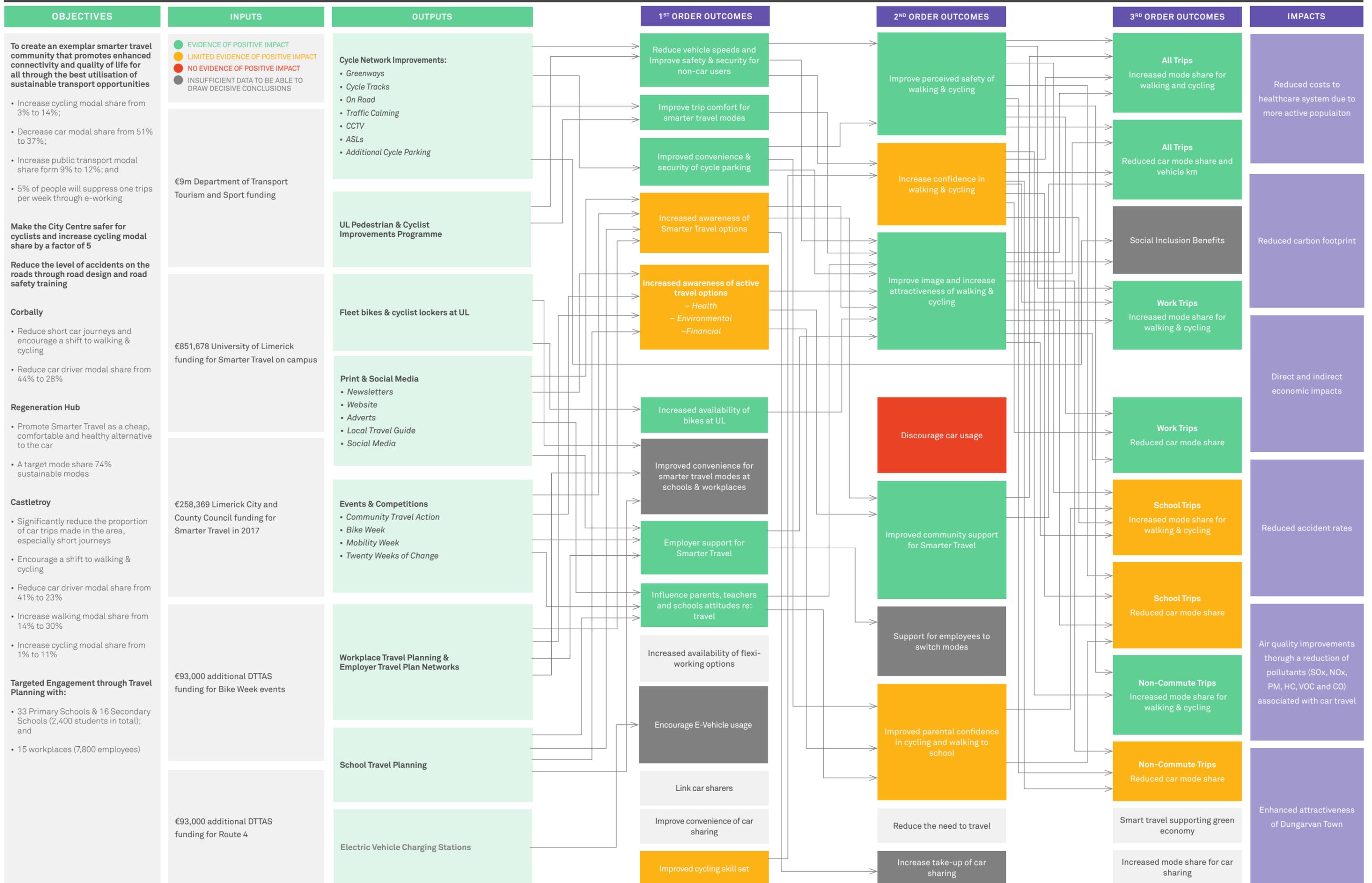
Higher unemployment rates in Limerick compared to the national comparator will have influenced a number of factors, which in turn are likely to have impacted modal shift in Limerick. For example, bike ownership per household in Limerick was 0.81 in 2016 compared to 1.15 in the national comparator sample, and car

ownership was also lower at 1.26 per household compared to 1.65. The availability of different modes will have influenced the observed changes in mode use among socio-economic group 'E', particularly the decrease in car use of 8.1pp, decrease in cycling of 1.3pp and increase in walking of 9.7pp.

TABLE 5.15: SUMMARY OF MODAL SHIFT IN LIMERICK AND KEY CONTRIBUTING FACTORS

Trip Type	Gross Modal Shift 2012–2016	Contributing Factors
All Trips	<p>Car: <u>-2.7pp</u> to 64.0%</p> <p>Walking: <u>+4.1pp</u> to 26.1%</p> <p>Cycling: <u>+0.9pp</u> to 3.4%</p>	Improvements in infrastructure have improved perceptions of safety, trip comfort and the image of Smarter Travel contributing to modal shift.
Work	<p>Car: <u>-4.6pp</u> to 77.7%</p> <p>Walking: <u>+3.6pp</u> to 11.7%</p> <p>Cycling: <u>+0.2pp</u> to 3.7%</p>	Investment in infrastructure have improved perceptions of safety, trip comfort and the image of Smarter Travel contributing to modal shift. Smarter Travel campaigns at a number of large workplaces including Northern Trust, Cook Medical and Vistakon.
Escorted education	<p>Car: <u>-3.0pp</u> to 87.3%</p> <p>Walking: <u>+5.0pp</u> to 15.4%</p> <p>Cycling: No change recorded</p>	Smarter Travel promotion at primary schools has had the most positive impact on modal shift for escorted education trips. This has also been heavily influenced by social group 'E'.
Non-Commuting	<p>Car: <u>-2.6pp</u> to 62.3%</p> <p>Walking: <u>+6.5pp</u> to 28.1%</p> <p>Cycling: <u>+0.5pp</u> to 2.5%</p>	Improvements in infrastructure have improved perceptions of safety, trip comfort and the image of Smarter Travel contributing to modal shift.

FIG 5.24: IMPACT OF BEHAVIOURAL CHANGE INVESTMENT IN LIMERICK SMARTER TRAVEL AREA



6



Westport

6.0 Summary of Smarter Travel Delivery in Westport



Inputs and Outputs

- €5m of Smarter Travel funding was awarded to Westport Smarter Travel.
- An additional €615,000³⁹ was invested in sustainable travel in Westport since 2012 by Mayo County Council and €155,000 was provided by DTTAS in 2011 for the Northern Greenway project.
- Over 95% (€4,908,741) of DTTAS Smarter Travel funding in Westport⁴⁰ was invested in infrastructure. The remaining 4.8% (€246,259) which was invested in behavioural change projects excludes staff costs which were covered by Mayo County Council (MCC).
- Approximately 7km of greenway infrastructure was delivered in Westport. This was in addition to the main section of the Westport Town Greenway which was in place before the STA programme. Less than 2km of on-road infrastructure was delivered in Westport.
- Public realm improvements and traffic calming were delivered in the town centre and the Westport Quay area.

- Although the spend on behavioural change in Westport was low relative to the infrastructure spend, there were significant outputs including school travel planning at all schools, an annual programme of events and challenges and a marketing campaign.

Management of Delivery

- A team of five people were involved in Smarter Travel delivery in Westport either on a full time basis or on a part time basis. The lack of full time resources on the project impacted the scope of delivery, particularly the behavioural change programme.
- An Taisce staff working on Smarter Travel delivery have been retained on a temporary basis by MCC to work on school travel planning and events.

³⁹ Including an estimated €150,000 which was to be invested in the Horkan's Hill Greenway project in 2017

⁴⁰ Including the €155,000 provided for the Northern Greenway project in 2011

Delivery Against Plan

- A number of infrastructure projects were not delivered including the 'Smarter Travel Pavilion' and cycling facilities on the N5.
- Planned introduction of on-street parking charges was cancelled due to a lack of support from elected members and the business community. Reductions to speed limits within the town centre were also cancelled due to the national road status of many routes concerned.
- Limited resources with behavioural change experience meant that some elements of the behavioural change project were not delivered including personalised travel planning and workplace travel planning.

Programme Outcomes

- Targets set for the programme were overly ambitious and therefore cannot be used to measure progress.
- The HTS shows slight but positive impacts on modal shift in the WSTA which are higher than changes experienced within the national control.
- Across all trips, car mode share decreased by 1.8pp from 2012-2016 with a 3.1pp increase in walking and a 0.9pp increase in cycling. There were increases in walking and cycling for employment and non-commuting trips. The HTS shows a 4.1pp increase in car mode share for escorted education trips since 2014 despite an initial reduction of 2.8pp from the 2012 base of 83.1%.
- There was evidence of a higher shift from car to walking and cycling between 2012 and 2014, before an increase in car mode share between 2014 and 2016.
- Increases in car mode share since 2014 for most trips may reflect the improved economic circumstances in Westport with the proportion of the HTS sample in employment increasing from 56% in 2014 to 61% in 2016.
- There is a perception in Westport that the greenways delivered are not always the most convenient option for trips because of their orbital arrangement and steep gradients. Alternative on-street routes do not provide an attractive alternative due to traffic volumes.

Impact Attribution

- There is evidence that both infrastructure and behavioural change measures have impacted the modal shift that has occurred.
- The infrastructure improvements have improved perceptions of safety and ease of getting around by walking / bicycle, contributing to modal shift.
- School travel planning, events and challenges organised as part of the 'Winning Hearts and Minds' campaign have improved the image and awareness of Smarter Travel. Despite this, car mode share has increased across all trips since 2014.
- The orbital nature of the Greenway network, steep gradients on some access points and lack of traffic management and parking interventions in the town centre provide barriers to further modal shift, especially for employment trips.



6.1 Overview

Westport had a population of 5,543⁴¹ in 2011 and is a compact town, with most parts of the urban area within a two kilometre radius of the town's main street. The principal employers in the town include Allergan Pharmaceuticals, Portwest, Field Boxmore, Westport House, the Castlecourt Hotel and Plaza Resort and Mayo County Council. Industrial land use is located away from the town centre, with industrial parks located on the approaches to the town, while commercial centres are confined to the town core. As a commercial, industrial and service centre, the town also serves a wider hinterland of approximately 20,000 persons along the western seaboard of County Mayo.

Westport has a strong tourism industry and is a key attractor of leisure trips in the west of Ireland. There are four primary schools, two secondary schools and a College of Further Education located within the town.

The overall vision for the Westport Smarter Travel (WST) programme was to:

“Make Westport the best possible Smarter Travel Town where everybody – young and old – will choose walking and cycling as their natural choice of travelling for short journeys within the town and its environs. For longer journeys people will, whenever possible, opt for public transport or car sharing as their preferred choice of transport”.

Specific objectives identified for the programme included:

- Creating a safer and slower public realm in Westport's historic town centre and Quay area;
- Creating a significant modal shift in Westport – by substantially reducing the number of car trips per day and increasing the number of trips using sustainable modes;
- Significantly reversing the school and work travel trends that have occurred over the last twenty years;
- Increasing the proportion of car sharing on car journeys;
- Developing a Smarter Travel Pavilion - a customer service centre to coordinate sustainable transport modes in Westport;
- Promoting Smarter Travel leisure activity;
- Making Westport Ireland's walking and cycling capital; and
- Making sustainable travel the preferred mode of access for all visitors coming to Westport, and for their travel needs while in the area.



The following sections present details of the financial inputs, outputs delivered and outcomes achieved. The contribution of the various infrastructure and behaviour change measures to the observed change in mode share is also presented.

⁴¹ Note, this is based on the 2011 boundary 'Westport Legal Town' which is no longer in use. Census 2016 recorded a population for the newly defined 'settlement' of Westport of 6,198.

6.2 Programme Inputs

The Smarter Travel bid proposed by Westport consisted of complementary infrastructure and behavioural change measures and was supported by a partnership between the local authority, business and voluntary groups in the area. Westport was allocated €5m of STA funding from DTTAS and a delivery plan was agreed on this basis. The initial delivery plan proposed a relatively low spend on behavioural change at just 3.5% of overall funding (€175,000), but total spending reported on behavioural change by the end of the programme was slightly higher than this and made up 4.8% of spending from the STA funding (€246,259). It should be noted that the staff costs in Westport were funded directly by Westport Town Council (WTC) and Mayo County Council (MCC), and not from within the DTTAS funding.

Other sources of funding for the Smarter Travel Programme were as follows:

- 155,000 was provided by DTTAS in 2011 for investment in the Northern Greenway project as part of the 'Jobs Initiative' funding stream;
- Mayo County Council provided a total of approximately €465,000 in additional funding for Smarter Travel infrastructure projects up to the end of 2016; and

- Mayo County Council also anticipated providing an additional €150,000 by the end of 2017 to complete the Horkan's Hill greenway.

In total, an additional €770,000 was therefore invested from sources other than DTTAS STA funding, therefore making a combined planned investment in Westport €5.77m.

A significant amount of investment in greenway infrastructure in Westport and the wider area was made in advance of the launch of the Smarter Travel programme. The Great Western Greenway between Westport and Achill Island was completed in December 2010 following investment of approximately €5.5 million by DTTAS, Fáilte Ireland and MCC. The Westport Town Greenway, which received funding of €575,000 from DTTAS, opened in 2010. These investments were not part of the STA programme and therefore were outside of the scope of the evaluation.

6.2.1 Management of Delivery

The WST bid proposed a team of ten people to manage the programme but in practice, a team of approximately five people were more actively involved in delivery including the project manager, two on engineering and two on behavioural change. This team was not designated to work on Smarter Travel delivery on a full time basis with County Council staff working on the project on a part time basis only and two An Taisce staff seconded on a part time basis. The project benefitted from the continuity of having the same project manager throughout the four year programme. The fact that there was no full time team working on WST had an advantage in that Council staff could integrate Smarter Travel within other parts of the local authority and other projects.

The team lost a key member of the proposed team at an early stage in project delivery, whilst the lack of full time staff resources meant that some elements of the programme could not be delivered as committed within the bid.

Resource time for Smarter Travel from An Taisce was retained on a part time basis up to 2017. Although advantageous, this arrangement means there is limited knowledge transfer to the local authority for the ongoing delivery of behavioural change projects.

Programme delivery in Westport was also impacted by amalgamation of the town and county councils in 2014. Elected town council members who had given commitment to delivery of the Smarter Travel bid were no longer able to support various proposals of the plan during implementation and the programme often failed to gain the support of municipal councillors.

6.3 Programme Outputs

Of the €5,155,000 of DTTAS funding invested in the STA programme in Westport up to mid-June 2017 (including €155,000 for the Northern Greenway provided by DTTAS in 2011), over 95% (€4,908,741) was invested in infrastructure measures and 4.8% (€246,259) in behavioural change measures.⁴² A breakdown of the funding invested is shown in Figure 6.1. The following sections provide an overview of this investment.

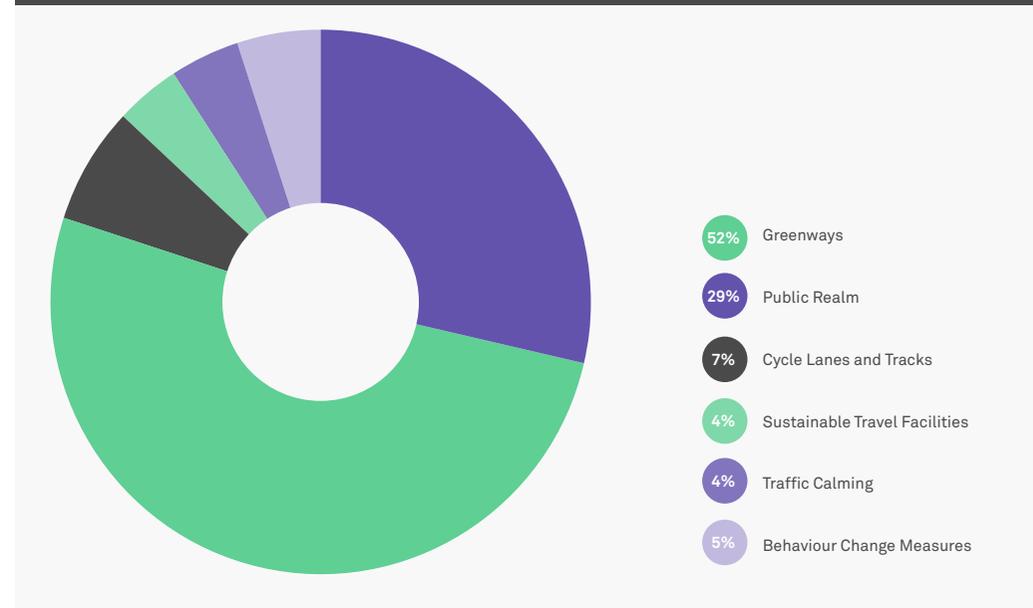
6.3.1 Infrastructure Measures

The Westport bid proposed a package of infrastructure improvements, with the creation of a town greenway network, utilising abandoned railway lines and tracks as a central element. It was intended that the greenways would be complemented with cycle tracks and lanes on the existing public roads (Figure 6.2). Other proposed infrastructure and traffic management measures included the improvement of streets in the town centre, the introduction of Pay and Display parking, the introduction of an extensive new town-wide 30km/h zone and the provision of a 'Smarter Travel Pavilion'.

The Westport STA infrastructure investment was focused on the ongoing development and expansion of the town greenway network (Figure 6.3). As mentioned in 6.2.1, both the Great Western Greenway and the main section of the Westport Town Greenway were in place before the STA programme. Overall, at least 52% of all infrastructure spending was on greenways. The greenway provides a traffic free route for walking and cycling and there are direct connections from the greenway to two primary schools, one secondary school and the town's main employer, Allergan. Key links to and from the greenway were also delivered as part of the STA programme, including:

- The extension of the Great Western Greenway to the IDA Business Park;
- The extension of the Town Greenway to Knockranny;
- The Westport House Greenway, which provides a direct connection between the quay area and the Great Western Greenway; and
- New and upgraded links from the town greenway to residential estates and key destinations such as Westpoint Shopping Centre.

FIGURE 6.1: WESTPORT SMARTER TRAVEL – SUMMARY OF PROJECT SPEND FROM INCEPTION TO Q2 2017 (incl. DTTAS funding allocation only)

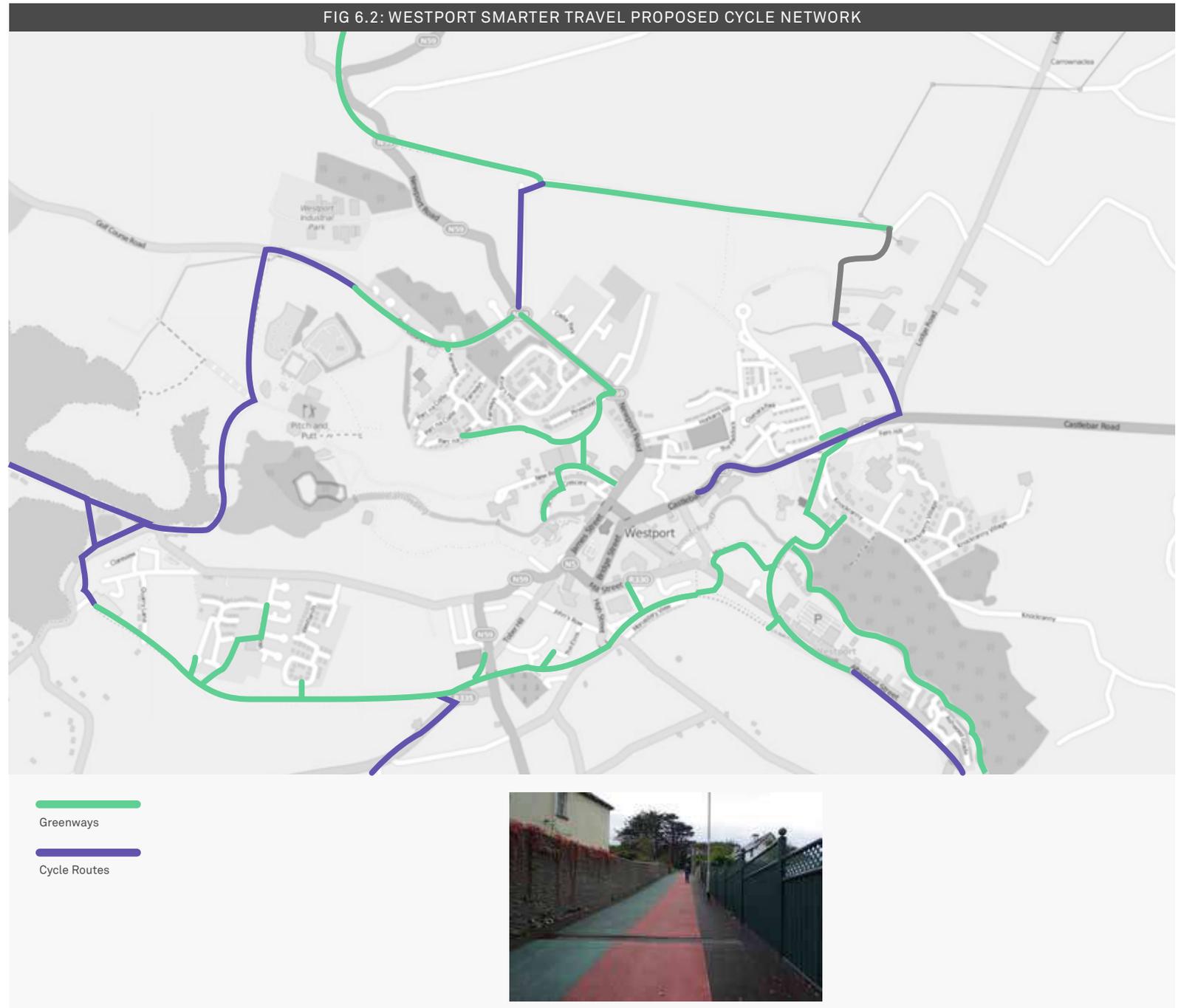


⁴² As mentioned previously, Mayo County Council also invested €615,000 of funding in Smarter Travel in Westport during the programme period. However, for the purpose of this breakdown and Figure 6.1, only spending relating to the DTTAS funding has been included, as a full breakdown of the Mayo County Council contribution into each spending category is not available.

FIG 6.2: WESTPORT SMARTER TRAVEL PROPOSED CYCLE NETWORK

To complement the town greenway, some investment was also made in on-road cycle lanes on the Castlebar Road and Altamont Street. WST also invested in public realm improvements and traffic calming, mainly within the town centre and at The Quays. An overview of all infrastructure improvements and the associated costs is provided in Table 6.1.

Excessive speed on approach roads and close to the town centre was recognised as a problem and a barrier to cycling, particularly the N5 (Castlebar Road), the N59 and Quay Road. However, measures to address this were not delivered through the programme. The planned town-wide 30kph zone could not be delivered due to the national road status of the N5 and N59, both of which run through the town. The introduction of on-street Pay and Display was also not supported by elected representatives and the business community, despite the potential benefits outlined in the Smarter Travel bid and political support at the time of submitting the bid.



Two other aspects of the programme that were not delivered were the Smarter Travel Centre and supporting Park and Ride Facility. The Centre was proposed as a sustainable travel facility, with park and ride, offering a public transport service within the town and region. The centre would also have provided secure bike parking, lockers and shower facilities. The WST bid outlined that the centre would have a particular role in improving the sustainability of commuting travel between Westport and Castlebar. The scheme was cancelled following prioritisation of other elements of the programme.

TABLE 6.1: WESTPORT SMARTER TRAVEL INFRASTRUCTURE INVESTMENT			
Project	Description	Quantity	Cost
Greenways	Western Greenway extension to IDA Business Park	1.2km	€2,701,155 <i>[Plus €150,000 from MCC]</i>
	Northern Greenway	1.4km	
	Westport House Greenway	1.4km	
	Town Greenway Link to Knockranny (Castlebar Road)	0.7km	
	WTG link to Westpoint Shopping Centre	0.4km	
	Green links between estates (approx.. 15)	1.2km	
	Horkans Hill Greenway	0.7km	
Cycle Lanes & Tracks	Castlebar Road Cycle Lanes	1km	€361,920
	Allergan Road	0.2km	
	Altamount Street/Mill Road	0.4km	
Public Realm/ Footpath Improvements	Town Centre Public Realm Improvements	0.5km	€1,470,917
	Quays Public Realm Improvements	0.6km	
	Coast Road Footpath	0.5km	
Traffic Calming	Traffic Calming - 18 raised junctions, 12 ramps, 2 zebra crossings Toucan Crossing of the N59 and N5	-	€181,346
Sustainable Travel Facilities	Bus Drop off Point (Scoil Padraig)	-	€193,403
	Bike parking stands (approx. 100) and shelters		
	Signage and Electronic Information Displays		
			€465,000 from MCC
Total STA Infrastructure Investment			€5,523,741

FIG 6.3: WESTPORT SMARTER TRAVEL INFRASTRUCTURE DELIVERY



Pre-Existing Infrastructure

Sta Infrastructure Project

- Smarter Travel Primary School
- Smarter Travel Secondary School
- Old Scoil Phadraig
- New School Phadraig

- 1 WESTPORT HOUSE GREENWAY EXTENSION
- 2 NORTHERN GREENWAY
- 3 TOWN CENTRE BIKE PARKING, PUBLIC REALM IMPROVEMENTS & TRAFFIC CALMING
- 4 CASTLEBAR ST. CYCLE LANES
- 5 HORKAN'S GREENWAY
- 6 WESTPORT GREENWAY EXTENSION TO KNOCKRANNY
- 7 ALLYMOUNT ST. CYCLE TRACK
- 8 MILL STREET IMPROVED BUS FACILITIES (SCHOOL DROP-OFFS)
- 9 WESTPORT TOWN GREENWAY
- 10 EXTENSION OF GDW GREENWAY TO IDA BUSINESS PARK
- 11 ALLERGEN ROAD CYCLE LANES



6.3.2 Behavioural Change Measures

The WST behavioural change campaign was given the title 'Winning Hearts and Minds' and included general promotion and branding activities, school activities, workplace travel planning and a community engagement programme. WST seconded two employees from the An Taisce Green Schools Programme on a part time basis to deliver the behavioural change programme. The behavioural change programme represented just 4.8% of the DTTAS funding invested; despite this apparently low figure, a substantial and high profile programme of behavioural change measures was delivered.

Spending on the behavioural change programme in Westport amounted to a total of €246,259 up to the end of 2016. Disaggregated costs for the various components of the behavioural change programme in Westport are not available.

Smarter Travel was promoted using a variety of media, including a website, social media, local newspapers and variable message signs located on key routes into the town. A 'greenway map' produced by the WST team proved popular with residents and visitors and was published online and distributed through local hotels. Smarter Travel was also promoted to visitors through the 'Destination Westport' website.

Workplace travel planning in Westport proved difficult to implement as a result of the limited number of large businesses in the town; resource constraints within the local authority were also noted. However, the travel behaviour challenge 'Operation Transportation' engaged teams of employees in local businesses and was generally very well received. WST also worked

with local cafés on a 'Bike Friendly Café' initiative by organising vouchers for a free tea or coffee for every 10 smarter travel journeys logged by Operation Transportation participants and providing bicycle pumps and puncture repair kits to interested cafes.

As in all of the STAs, schools were a particular focus of behavioural change investment. The An Taisce officers engaged with all primary and secondary schools in Westport and all schools became actively involved with WST. The Travel Officers assisted schools to organise their own events, providing information, support and resources, and also organised events and competitions for multiple schools. School events were combined with community wide promotion of smarter travel, such as the Spring Forward festival, and also tied into national green schools events such as Walk to School week in May.

Cycle training was delivered to classes in each school and parent and teacher seminars were delivered to provide information and gain support for WST. Adult cycle training was also organised on numerous occasions but there was limited interest from the community.

Events were a key part of the Winning Hearts and Minds campaign, with a wide range of community events organised to promote an awareness of Smarter Travel particularly during the 'Spring Forward' festival organised by WST in April since 2014 and European Mobility Week each September. Some examples of events organised include: 'Bike Buffet' events; Greenway walks and cycles; 'Westport Walks Weekdays' promotions; 'Park-ing Day' (where a

parking space is temporarily transformed into a mini parklet by community groups) and award ceremony events connected to challenges and competitions. Further information on events is provided in Section 6.4.4.

A planned component of the behavioural change programme which was not delivered was personalised travel planning. The main reason for this was the limited experience and resource available locally to deliver the project. Also, although reducing single car occupancy through car sharing was outlined as a core element of the proposed WST delivery programme, there are no tangible programme outputs in this regard.

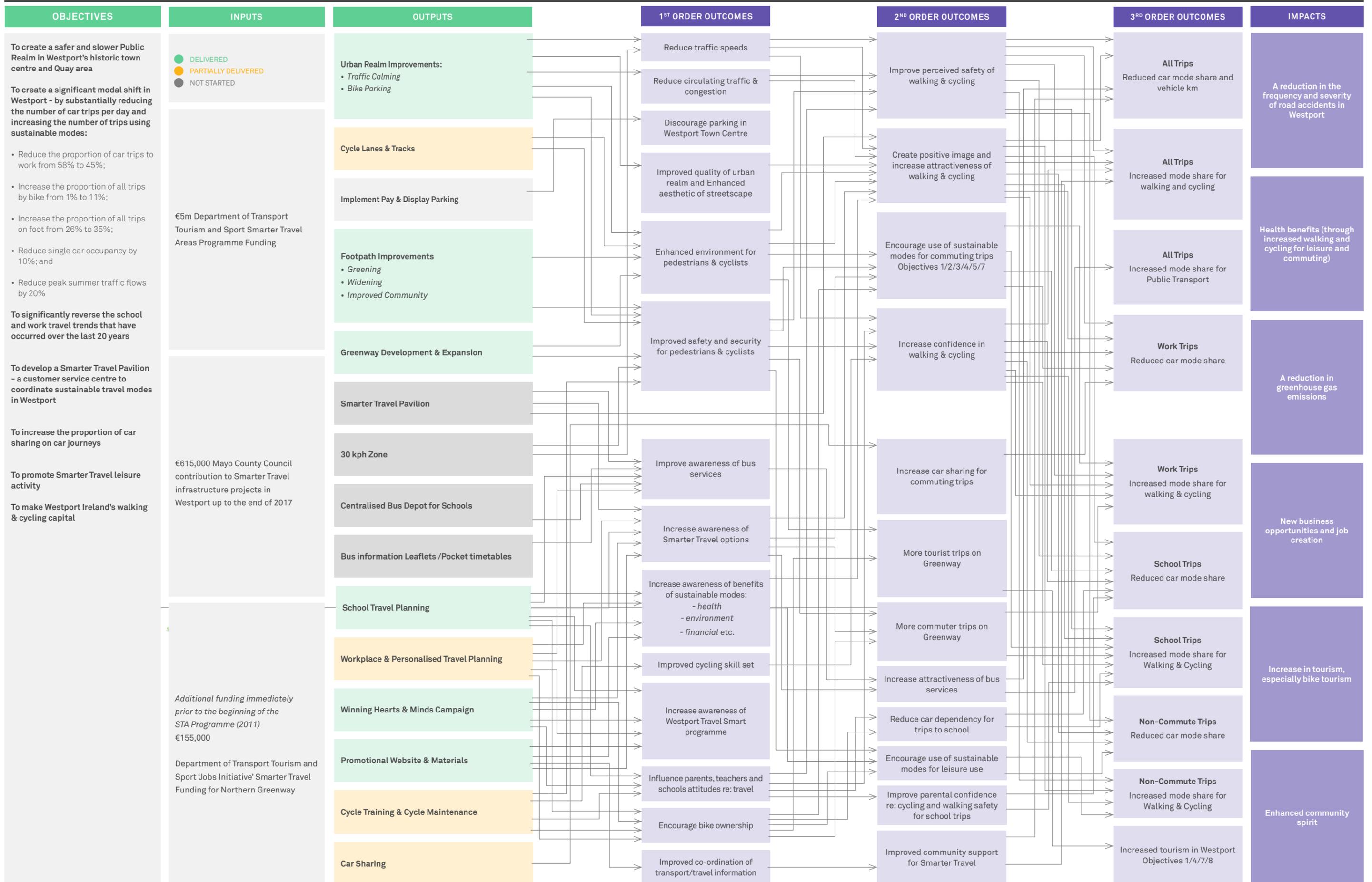
6.3.3 Summary

The investment programme in infrastructure and behavioural change measures in Westport was modified following STA funding award, during the design and initiation phase. The outcomes and impacts of Smarter Travel investment can therefore only be measured against schemes and initiatives that were delivered, which are summarised in the Logic Map in Figure 6.4.

The Logic Map is used throughout the evaluation to establish the causal links or pathways between interventions and anticipated or targeted outcomes. The Logic Map links programme outputs to the anticipated short/medium term outcomes which were identified during a focus group with the WST delivery team. The Map also includes the overall anticipated longer term impacts of investment which align with the programme objectives.



FIG 6.4: LOGIC MAP SUMMARY OF THE ANTICIPATED IMPACT OF THE SCHEMES DELIVERED THROUGH WESTPORT SMARTER TRAVEL



6.4 Programme Outcomes

This section provides a detailed analysis of the impact of Smarter Travel investment on travel patterns and attitudes in Westport. As previously outlined, modal shift is the primary objective of Smarter Travel and therefore, results of the Household Travel Survey (HTS) provide the primary source of evidence. Modal shift identified through the HTS is referred to as the 'gross change', without changes in national controls taken into account. The National Travel Survey (NTS) provides a valuable control sample while the Census results of 2011 and 2016 have also been used as a secondary source of evidence. The 'net' level of modal shift in Westport has been determined by calculating the difference between changes within the HTS and NTS control.

6.4.1 Modal Shift

The observed change in modal split is presented for the following main trip purposes:

- All trips;
- Employment trips;
- Education trips; and
- Non-commuting trips.

All Trips

The change in mode share in Westport for all trips is presented in Figure 6.5. Private car mode share changed by -1.8pp between 2012 and 2016, from 67.8% in 2012 to 66% in 2016. A lower car mode share of 62.9% was recorded in 2014. Walking mode share increased by +3.1pp over the same period, from 24.3% in 2012 to 27.4% in 2016. A higher walking mode share of 31.3% was recorded in 2014. Cycling mode share increased by +0.9pp, from 1.4% in 2012 to 2.3% in 2016.

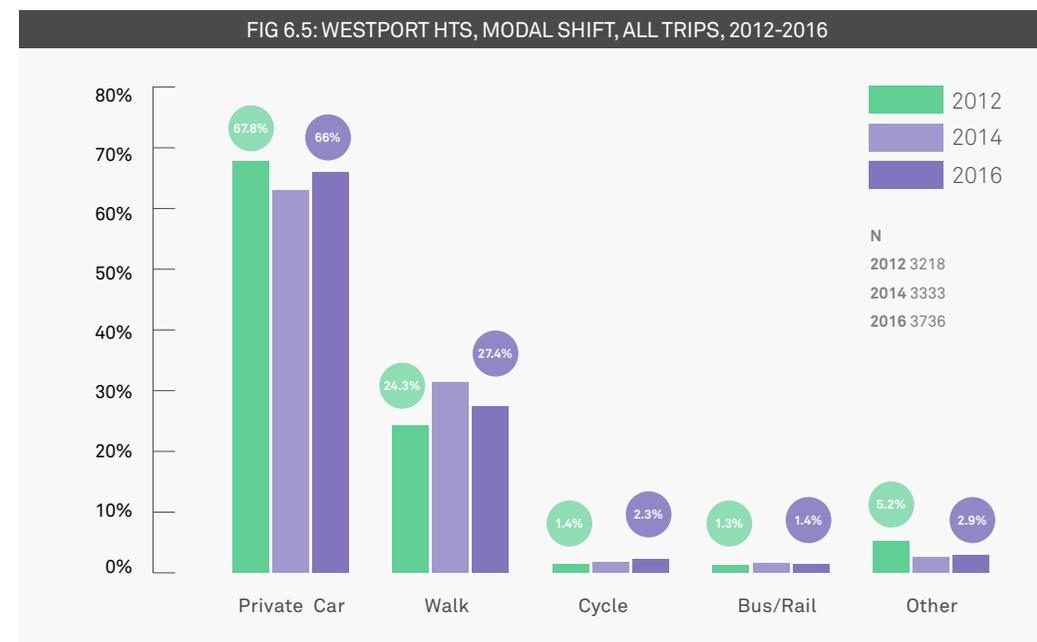
The NTS (excl. Dublin) results showed that the change in private car use nationally between 2012 and 2016 was -0.8pp, slightly less than the -1.8pp change observed in the Westport HTS. The net change in Westport, taking account of the observed national change, was therefore -1.0pp. Similarly, the Westport mode share of Lorry/Motorcycle/Other changed by -2.0pp between 2012 and 2016, compared to a +1.0pp increase reported by the NTS, representing a net change of -3.0pp in Westport.

The increase in walking (+3.1pp) observed in the Westport HTS was not replicated nationally in the NTS (+0.2pp), generating a net change of +2.9pp. It is also noteworthy that the Westport 2012 baseline walking mode share (24.3%) was already substantially higher than nationally (11.3%). Similarly, the increase in cycling mode share (+0.9pp) was higher than the increase in

the national travel survey (+0.1pp), generating a net change of +0.8pp. The cycling mode share was also higher in 2012 in Westport (1.4%) than nationally (0.6%).

Changes in mode share in Westport since 2012 should be viewed in the context of the changing economic circumstances of the town. In 2012, 11% of HTS respondents were classified as unemployed. By 2014, this reduced to 7% and by 2016 it was down to 5% which was lower than unemployment of 6% recorded in the control.

FIG 6.5: WESTPORT HTS, MODAL SHIFT, ALL TRIPS, 2012-2016



There was also a noted a switch to sustainable modes between 2012 and 2014 (Figure 6.6), especially for trip distances of 4km or below. However, these increases were not maintained through to 2016. For trips of under 2km, the walking mode share increased by 11.0pp to 55% in 2014, before declining by the same amount in 2016.

To consider the modal shift that occurred between 2012 and 2016, a demographic analysis of the HTS results was completed. This considered the influence of gender, age and socio-economic group on reported travel patterns. Analysis of the results according to gender showed that there were significant

differences in the modes that were chosen (Table 6.3). There was a +7.4pp increase in the number of men who walked and this was accompanied by a reduction in private car (-5.5pp) and van or lorry mode share (-2.8pp). However, for women there was a slight decline in walking (-0.7pp) and a small increase in private car (+1.4pp) travel. For both genders, there were slight increases in bicycle travel; +0.8pp for men and +1pp for women.

FIG 6.6: WESTPORT MODAL SHIFT BY TRIP DISTANCE (HTS ALL TRIPS, 2012-2016)

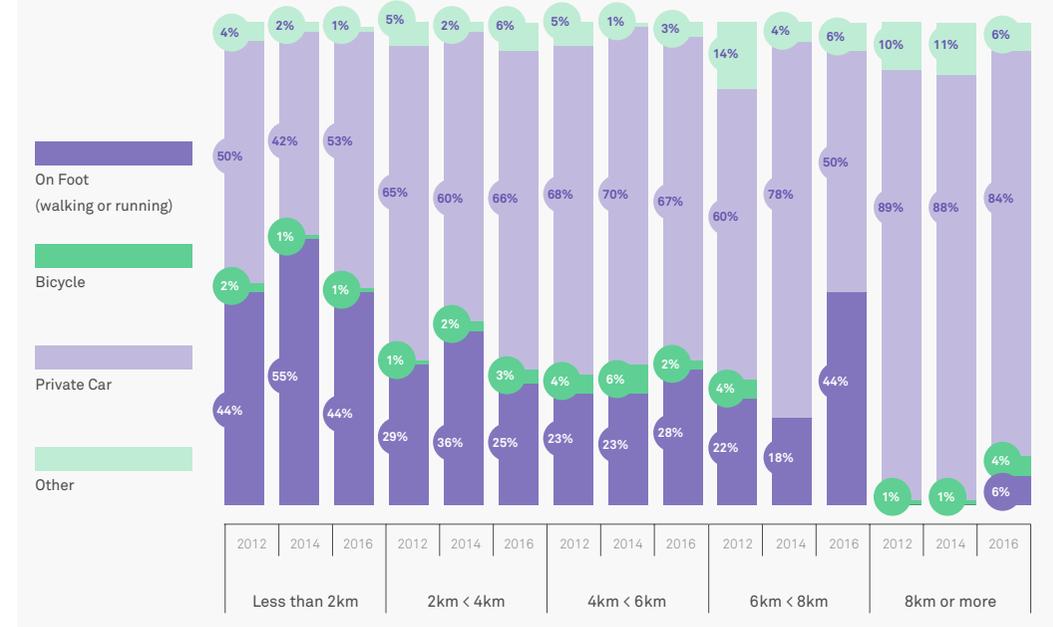


TABLE 6.2: COMPARISON OF HTS SURVEY RESULTS WITH NTS (ALL TRIPS)

	Westport		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	66%	-1.8	66.8%	-4.0	81.3%	-0.8	74.3%	-2.2
On Foot	27.4%	<u>3.1</u>	24.8%	4.4	11.5%	0.2	14.6%	1.0
Bicycle	2.3%	<u>0.9</u>	3.1%	0.8	0.7%	0.1	1.7%	0.5
Public Transport	1.4%	0.0	2.9%	-0.1	2.0%	-0.4	5.5%	0.3
Lorry/ Motorcycle/ Other	2.2%	-2.0	1.6%	-0.9	4.0%	1.0	3.1%	0.4
Taxi	0.7%	-0.3	0.8%	-0.2	0.5%	-0.1	0.8%	0.0

TABLE 6.3: % CHANGE IN MODE (2012 – 2016) ACCORDING TO GENDER (HTS, ALL TRIPS)

	Male		Female	
	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	61.6%	-5.5	69.8%	+1.4
On Foot	27.8%	<u>+7.4</u>	27.1%	-0.7
Bicycle	3.0%	+0.8	1.7%	<u>+1.0</u>
Bus	1.8%	<u>+0.9</u>	0.5%	-0.6
Rail	0.2%	-	0.3%	-
Taxi/Hackney	1.3%	+0.2	0.2%	-0.7
Van / Lorry	4.2%	-2.8	0.4%	-0.1
Motorcycle	0.0%	-0.7	0.0%	-0.2
Other	0.0%	-0.3	0.0%	-

Examining the results according to age group highlighted some clear differences (Table 6.4). Private car use declined for all age groups except for those aged 25-29 where there was a significant increase of +10.3pp at the expense of walking (-7.1pp) and van/lorry travel (-6.1pp). This was in sharp contrast to those aged 18-24 where private car use fell by -21.3pp, with a corresponding increase of +19.5pp in walking and an +8.3pp increase in bus travel. In relation to older groups, those aged 60-64 reported a +10.5pp increase in walking, with a corresponding reduction in car, rail, van/lorry and motorcycle. There were no statistically significant changes in the 40-59 age groups, but there was some evidence of a small reduction in private car travel and transference to sustainable modes.

HTS respondents were coded to a socio-economic group according to the occupation of the Chief Income Earner in the household following a standard classification (descriptions of each group are provided in Chapter 3). Table 6.5 presents the modal shift according to socio-economic group. The largest modal shift was observed within socio-economic group 'E' (low income workers, unemployed and pensioners), where private car use declined significantly by -10.6pp and the mode share of walking increased significantly by +14.4pp. The second largest increase (+7.4pp) in walking was reported among the affluent Socio-economic group 'AB' (middle/upper class) but there was no

significant change in the use of private modes. Cycling increased significantly among socio-economic group 'C2' (+3.1pp), and slightly (but insignificantly) for groups 'AB', 'C1' and 'D'.

Notably, socio-economic group 'D' (Semi Skilled and Unskilled Manual Workers) recorded a significant reduction of 5.4pp in the mode share of walking between 2012 and 2016. There was also a significant increase (+5.5pp) in private car use. The increase in walking mode share for groups 'A' to 'D' combined is not statistically significant (+1.4pp), but the increase in cycling mode share for these groups combined is statistically significant (+1.5pp).

Information on the demographic composition of the HTS sample is provided in the HTS report in Appendix D.

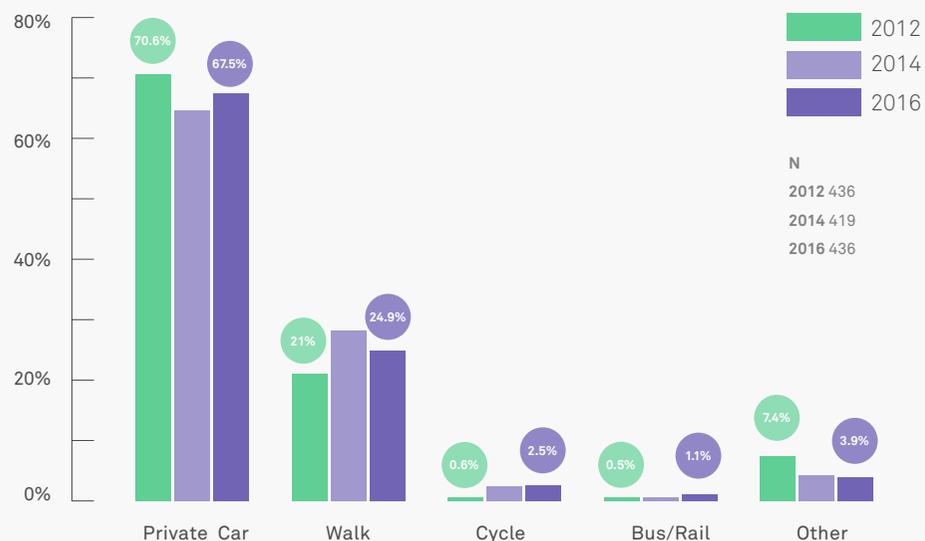
TABLE 6.4: WESTPORT PERCENTAGE CHANGE IN MODE (2012 – 2016) ACCORDING TO AGE GROUP

All trips, Westport, change in mode share in percentage points, comparing 2012 with 2016							
	18–24	25–29	30–39	40–49	50–59	60–64	65+
Private Car	<u>-21.3</u>	<u>10.3</u>	-2.5	-1.4	-1.6	-1.4	-0.4
On Foot	<u>19.5</u>	<u>-7.1</u>	0.0	3.3	2.5	<u>10.5</u>	3.2
Bicycle	-5.2	<u>4.2</u>	<u>1.9</u>	0.2	1.9	-0.3	0.7
Bus	<u>8.3</u>	0.4	-0.2	-0.5	-0.3	0.0	<u>-2.5</u>
Rail	0.7	-0.1	0.2	-0.2	0.2	-1.1	0.0
Taxi/Hackney	-2.2	-0.5	-0.1	0.2	-0.7	0.9	0.0
Van / Lorry	0.3	-6.1	0.8	-1.3	-1.9	-3.8	-0.5
Motorcycle	0.0	-1.0	0.0	0.0	-0.1	-4.7	0.0
Other	0.0	0.0	0.0	-0.5	0.0	0.0	-0.4
N (2016)	274	427	876	702	530	242	654

TABLE 6.5: WESTPORT PERCENTAGE CHANGE IN MODE (2012 – 2016) ACCORDING TO SOCIO-ECONOMIC GROUP (HTS, ALL TRIPS)

All trips, Westport, change in mode share in percentage points, 2012 - 2016					
	AB	C1	C2	D	E
Private Car	-2.0	-1.6	<u>-5.8</u>	<u>5.5</u>	<u>-10.6</u>
On Foot	<u>7.4</u>	0.3	3.2	<u>-5.4</u>	<u>14.4</u>
Bicycle	0.7	0.4	<u>3.1</u>	1.5	<u>-2.0</u>
Bus	0.4	<u>1.2</u>	-0.3	-1.0	-0.1
Rail	-1.2	0.4	0.1	-0.2	0.0
Taxi/Hackney	-0.2	0.2	0.0	-0.4	-0.6
Van / Lorry	-5.1	-1.0	-0.2	0.7	1.3
Motorcycle	0.0	0.0	-0.1	-0.6	-2.4
Other	0.0	0.0	-0.1	-0.2	0.0
N (2016)	572	976	794	800	460

FIG 6.7: WESTPORT HTS, EMPLOYMENT TRIPS, 2012-2016



Employment Trips

The change in mode share for employment trips is presented in Figure 6.7. Private car mode share for trips to work changed by -3.1pp, from 70.6% in 2012 to 67.5% in 2016. Car mode share for employment trips was lower in 2014, at 64.6%, than in 2016. Despite the decrease in unemployment in Westport from 11% in 2012 to 5% in 2016, car mode share remains below the 2012 level when unemployment was at its peak during programme delivery. Walking mode share increased by +3.9pp between 2012 and 2016, from 21% in 2012 to 24.9% in 2016. A walking mode share of 28.2% was recorded in 2014. Cycling mode share for trips to work increased significantly by +1.9pp, from 0.6% in 2012 to 2.5% in 2016. Bus mode share for trips to work increased by +0.6pp, from 0.5% in 2012 to 1.1% in 2016. Other mode share for trips to work decreased by -3.5pp, from 7.4% in 2012 to 3.9% in 2016.

An additional source of data on mode share for trips to work is provided by the 2016 Census, which records individuals' 'usual' mode for travel to work (rather than their travel on a particular day as recorded in the HTS/NTS). Because of the differences in methodology between the HTS and the Census, the two datasets cannot be directly compared. However, it can be observed that in both datasets, the mode share for walking and cycling has increased at least slightly and the private car mode share has decreased.

Changes within the Westport STA have also been compared against the neighbouring town of Castlebar (Table 6.7) using Census 2011-2016 results. The Census highlighted a small reduction in private car mode share in Westport (-2.7pp) compared to a slight increase (+0.6pp) in Castlebar. Walking and cycling mode share increased in Westport compared to a reduction in walking mode share in Castlebar.

TABLE 6.6: WORK TRIPS (COMMUTING AND BUSINESS TRAVEL COMBINED)
- COMPARISON OF HTS SURVEY RESULTS WITH NTS

	Westport		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	66.7%	-1.9	75.5%	-1.7	81.5%	-0.2	73.1%	-1.5
Walk / Cycle ⁴³	24.7%	+6.8	16.82%	+4.4	6.6%	-0.4	11.8%	+1.8
All Other	8.6%	-4.9	7.7%	-2.7	11.9%	+0.6	15.1%	-0.4

A direct comparison of mode share for commuting journeys only with the National Travel Survey is not possible as the National Travel Survey journey purpose of 'work' includes both commuting and business travel. On this basis, the HTS results have been recategorised to include both commuting and business trip, as shown in Table 6.6. The NTS (excl. Dublin) data shows that the reduction in private car mode share nationally for these 'work' trips was -0.2pp. This is lower than the reduction in car mode share for commuting and business travel combined in Westport of -1.9pp. The combined increase in walking and cycling mode share for commuting and business travel in Westport was +6.8pp, which contrasts with the minor decrease in the combined mode share of walking and cycling for these trips in the national control (excl. Dublin) of -0.4pp.

⁴³ Walking and cycling mode share have been combined in tables for specific trip types based on CSO advice that for some trip types, the NTS sample size was too small to yield statistically reliable figures for modes with small numbers of trips.

Education Trips (Escorted)

Given that there are no major third level institutions in Westport and that the HTS can only cover trips made by those over 18 years of age, the number of independent education trips recorded in the HTS is relatively small. Only escorted education trips are therefore presented. Escorted education trips were identified in the HTS analysis using a combination of information and represent trips taken by persons over 18 years of age to escort another person to any level of education (including childcare and third level). The age of the person being escorted is not identified, but the majority of these trips were assumed to be school trips.

Car mode share for escorted education trips increased by +4.2pp, from 83.1% in 2012 to 87.3% in 2016 (Figure 6.8). However, car mode share in 2014 was lower, at 80.3%. Walking mode share for escorted education trips changed by -5.3pp over the same period, from 15.3% in 2012 to 10% in 2016. A higher walking mode share of 17.9% was recorded in 2014, which had represented an increase compared to 2012. Cycling mode share for escorted education trips increased very marginally between 2012 and 2016, by +0.5pp, but this represented an increase of just one trip.

The NTS does not record the purpose of escorted trips and therefore data is not available for direct comparison with the HTS. However, the Census, carried out in April of 2011 and 2016, provided information on trips to education. The Census records the usual travel mode of all pupils/students aged five years and over to school or college and therefore these trips are not broken down into independent and escorted trips. Census results showed a small overall shift towards sustainable modes for education trips in Westport between 2011 and 2016, as an increase was recorded in the mode share of walking (+2.7pp) between the two Census periods (Table 6.8). However, there was also a marginal reduction in cycling in Westport by -0.9pp, which was similar to the decrease in Castlebar.



TABLE 6.7: USUAL MODE OF TRAVEL TO WORK (CENSUS, 2011 – 2016)

	Westport Urban Area		Castlebar Urban Area	
	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	60.7%	-2.7	70%	0.6
Walk	26.3%	0.4	19.3%	-0.7
Cycle	2.2%	1.2	1.5%	0.3
Bus/Rail	0.7%	-0.2	0.8%	0.3
Other	9.9%	1.4	8.4%	-0.5
Total (n)	3619		2637	

TABLE 6.8: WESTPORT CENSUS COMPARISON – USUAL MODE OF TRAVEL TO SCHOOL OR COLLEGE – PUPILS/STUDENTS AGED 5 AND OVER (CENSUS, 2011 – 2016)

	Westport Urban Area		Castlebar Urban Area	
	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	49.3%	-2.6	57.9%	0.2
Walk	36%	2.7	32.4%	1.0
Cycle	2.0%	-0.9	1.4%	-0.8
Bus/Rail	11.6%	0.1	7.6%	-0.4
Other	1.1%	0.6	0.8%	0.1
Total (n)	929		2073	

Non-Commuting Trips

In order to obtain a more holistic overview of the outcomes of the STA demonstration project, the evaluation also considered the impact on “non-commuting” trips. In the STA context, non-commuting trips are defined as all trips excluding trips to work, education and escorting trips..

For non-commuting trips in Westport, private car mode share changed insignificantly by -0.5pp, from 64.1% in 2012 to 63.7% in 2016 (Figure 6.9). However, car mode share in 2014 was lower than in either 2012 or 2016, at 59%, which represented a decrease between 2012 and 2014 of -5.1pp. Walking mode share increased by +2.6pp between 2012 and 2016, from 27.3% to 29.9%. However, walking mode share was significantly higher in 2014, at 35.3%. There was a marginal increase in cycling mode

share of +0.9pp, from 1.6% in 2012 to 2.5% in 2016. In contrast to the pattern for walking, all of the increase in cycling was recorded between 2014 and 2016.

The change in mode share for non-commuting trips was compared against the NTS.⁴⁵ The change in mode share for non-commuting trips was compared against the NTS. The NTS (excl. Dublin) data shows that there was a marginal increase in private car mode share for non-commuting trips of 0.1pp. There was a slight decrease in private car mode share for these trips in Westport of -0.5pp. However, the combined increase in walking and cycling mode share observed in Westport for these trips (+3.5pp) contrasts with the national control where an increase of just +0.1pp was observed.



44 Note that within the HTS data, business/other work related trips have been included as 'non-commuting' trips, but this trip type is excluded from the NTS non-commuting data, as the NTS does not separate commuting and other work trips. However, these trips make up only a small proportion of the total non-commuting trips in the HTS sample.

FIG 6.8: WESTPORT HTS, ESCORTED EDUCATION TRIPS, 2012-2016

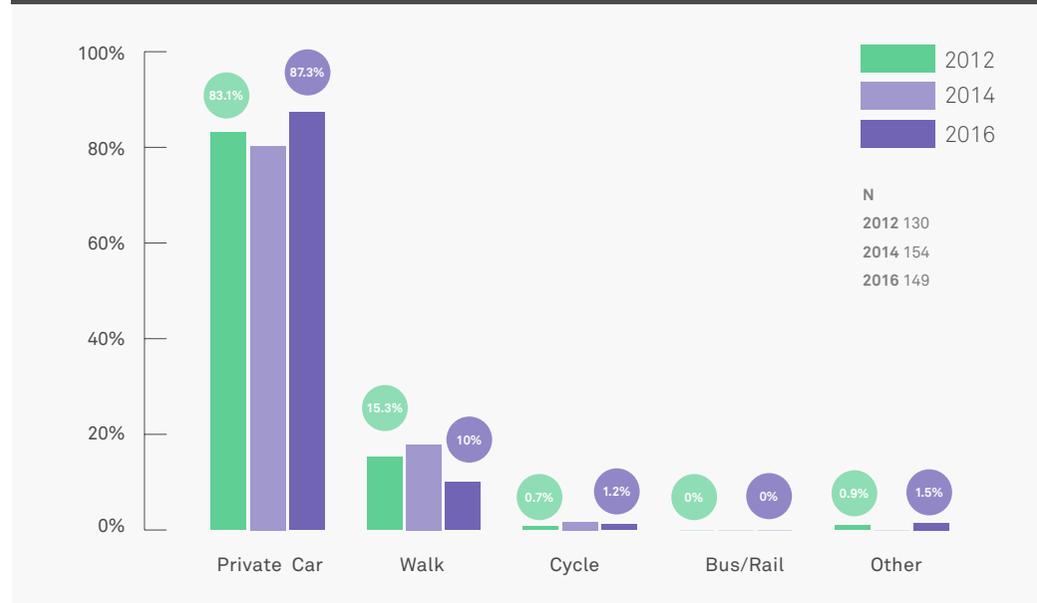
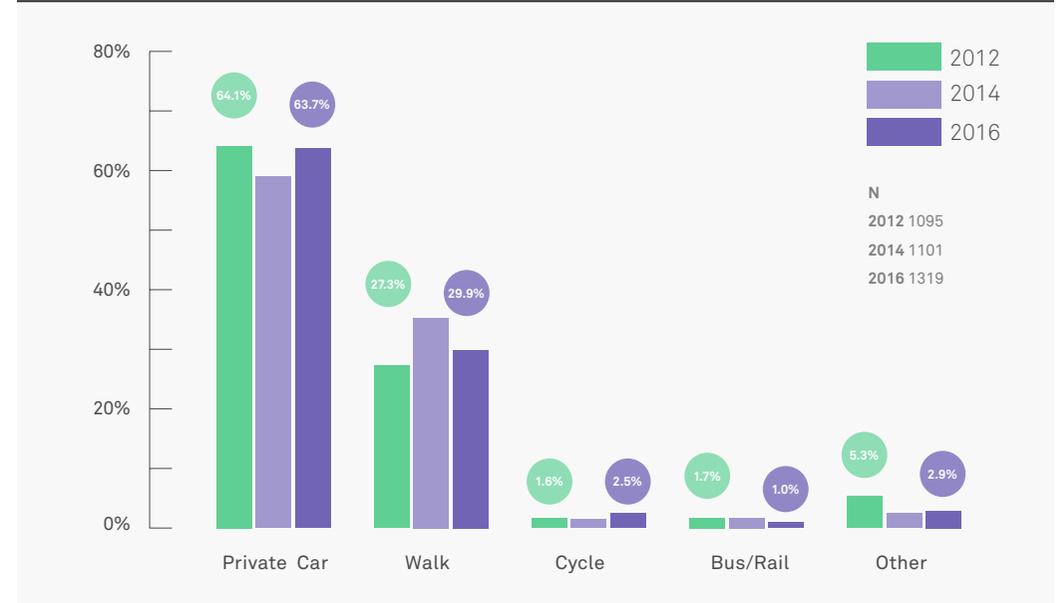


FIG 6.9: WESTPORT HTS, NON-COMMUTING TRIPS, 2012-2016



Summary of Modal Shift in Westport

The headline changes observed between 2012 and 2016 in the mode split of trips in Westport were therefore:

- There was a net reduction of 1.0pp in car mode share for all trips, compared to a 2.9pp increase in walking and 0.8pp increase in cycling;
- The greatest change in mode share for all trips was observed among male respondents to the HTS, recording a 5.5pp gross reduction in car use (compared to a 1.4pp gross increase amongst women);
- The greatest change in mode share for all trips was also observed amongst respondents between 18-24 years of age (-21.3pp gross reduction in the use of private car) and the 25-29 years of age (+10.3pp change in car use). The main shift in mode use was to/from walking in both instances;
- The largest change among socio-economic groups in mode share for private car use was observed among group 'E' (-10.6pp);
- There was evidence of a higher shift from car to walking and cycling between 2012 and 2014, before an increase in car mode share between 2014 and 2016;
- The gross reduction in car mode share for employment trips was 3.1pp between 2012 and 2016. Again, the main shift was to walking, which increased by 3.9pp (gross change);
- When comparing against National Travel Survey data (excl. Dublin), there was a net change in car mode share for the combined trip purposes of travel to work and business travel of -1.7pp.
- The gross change in car mode share for escorted education trips in the HTS was an increase of 4.2pp between 2012 and 2016,

with the main shift occurring from walking, which decreased by 5.3pp (gross change). However, census results in contrast showed a small overall shift towards sustainable modes for education trips in Westport between 2011 and 2016 which was greater than that observed in Castlebar (-2.6pp private car mode share in Westport, compared to +0.2pp in Castlebar);

- There was a 0.5pp reduction in the car mode share for non-commuting trips, with the walking mode share increasing by 2.6pp between 2012 and 2016.

TABLE 6.9: NON-COMMUTING TRIPS - COMPARISON OF HTS RESULTS WITH NTS

	Westport		STA		NTS (excl. Dublin)		NTS (incl. Dublin)	
	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012	2016	PP Change from 2012
Private Car	63.7%	-0.5	64.4%	<u>-3.1</u>	79.7%	0.1	72.8%	-1.6
Walk / Cycle	32.4%	3.5	30.7%	6.2	15.5%	0.1	19.7%	1.3
All Other	3.9	-3.1	5%	-3.1	4.9%	-0.2	7.5%	0.3



6.4.2 Attitudes and Perceptions

The changes in mode share have been impacted by smarter travel investment in both infrastructure and behavioural change measures. Results from the Westport HTS indicated that since 2012 the community perception of both safety and the attractiveness of walking and cycling improved overall, especially in comparison to the control sample, for example:

- The proportion of pedestrians who found it easy to get around their area on foot increased by 4.5pp, from 90.2% in 2012 to 94.7% in 2016. There was no change in the control sample, in which 85.1% found it easy to get around on foot;
- There was an insignificant increase in the proportion of people who agreed that their area was safe to walk about and get exercise in (+0.6pp), from 88.2% in 2012 to 88.8% in 2016. By comparison, there was a decrease in the control area from 76.0% to 73.4%;

- There was a significant increase of 18.5pp in the proportion who felt it was 'completely safe' to walk in their area with regard to traffic risk (although there was no overall increase in the proportion who thought it was safe, as there was a similar decrease in the proportion who thought it was 'fairly safe');
- The proportion of cyclists who found it easy to get around their area by bike increased by +9.0pp, from 79.2% in 2012 to 88.2% in 2016. In contrast in the control sample there was a decrease from 78.4% to 69.1% amongst cyclists; and
- There was a significant increase of 12.1pp in the proportion of people who agreed it was 'completely safe', to cycle in their area, from 30.9% in 2014 to 43% in 2016. In contrast in the control sample there was a decrease of 3.6pp in the proportion who thought it was completely safe from 13.6% in 2014 to 10% in 2016.



6.4.3 Infrastructure Investment Outcomes

Infrastructure made up 95% of DTTAS investment in Smarter Travel in Westport, with a focus on the provision of off-road greenways, cycle tracks and public realm improvements. As noted above, improvements were recorded through the HTS in the perceived safety, convenience and attractiveness of walking and cycling in the town. Within the WST programme, improvements to infrastructure were central to encouraging modal shift from car to sustainable modes.

This evaluation has considered the contribution of infrastructure investment to the observed changes in local resident's perceptions/attitudes, and thereby the contribution to changes in mode share. The infrastructure investment was analysed in the following three packages, with the contribution of each of these on travel behaviour and attitudes considered:

- Greenways;
- On-road cycling infrastructure; and
- Traffic management and parking.

Within each of these, the following information is provided:

- Intervention objectives;
- Interventions delivered;
- Outcomes and impacts, focusing on the contribution narrative; and
- Lessons learnt in terms of transferability and scalability.



GREENWAYS

Intervention Objectives

The main objectives of providing greenway infrastructure were:

- To create a safer environment for walking and cycling;
- To address perceptions of safety among local residents and visitors in relation to walking and cycling; and
- To promote Smarter Travel commuting and leisure activity.

Interventions Delivered

A series of greenways were delivered as part of the WST programme. The objective was to create a more comprehensive network around Westport, and key links into the town centre. Overall, 7km of off-road greenway and associated access routes were delivered as part of the programme. The primary investment was on extending the existing network with delivery of:

- **Northern Greenway:** The Northern Greenway covers approximately 1.4km and links the 'New Road' close to the town centre with the Pinewood and Fairways residential area in the north of the town and the Great

Western Greenway. The main section of the Northern Greenway was completed by 2013, but an additional section linking to the New Scoil Padraig and a section on Golf Course Road was completed in 2017;

- **Westport House Greenway:** The Westport House Greenway provides a link from Westport Quay to the Fairways estate through the grounds of Westport House (as well as a short link through land known as 'the bog field'). In combination with the Northern Greenway, it provides a link from the Quay to the Great Western Greenway.
- **Horkans Hill Greenway:** This 700m route section was constructed in 2017 and is located in the north east of the town close to Westport Sports Park and the Horkan's Hill residential area.

meant for leisure use only. In addition, visibility of the greenways in Westport from main roads and entry points in town centre is poor and as a result the facility forms a 'secondary layer' of the local transport network. This is exacerbated by the fact that there is little evidence of Smarter Travel on many streets within the town centre with high traffic volumes on narrow streets and speed limits unchanged.

Outcome of Greenways

Various evidence sources are available regarding the impact of off-road infrastructure including permanent automatic pedestrian and cycle counters along the routes and feedback from focus groups. Analysis of data from the automatic counters on the Westport Town Greenway highlight that it was most heavily used outside of standard commuting times.⁴⁵

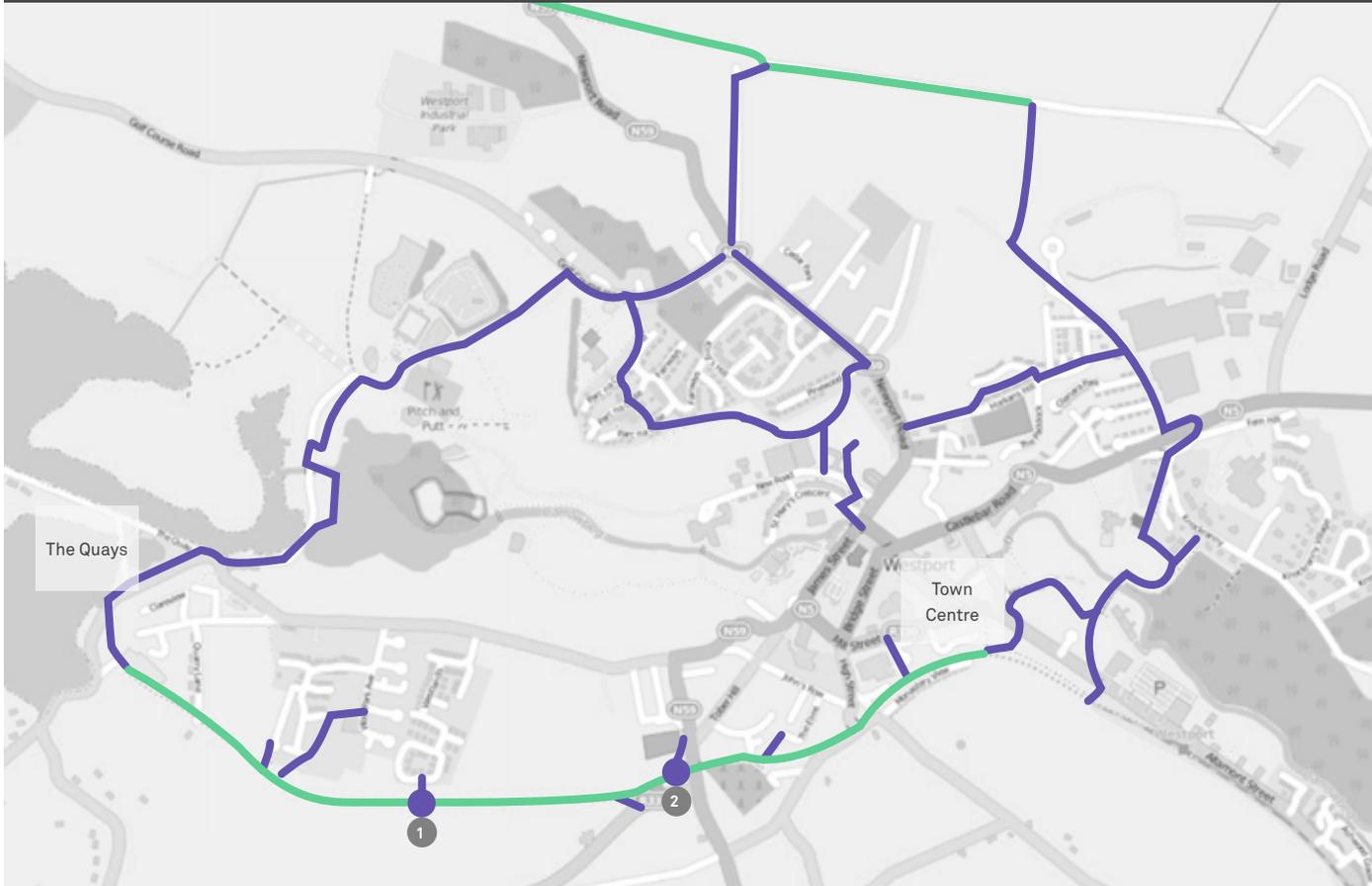
Links to previously developed off-road facilities were also enhanced as part of the WST programme, including an extension of the Great Western Greenway to the IDA business park, and numerous new or upgraded links to the Westport Town Greenway from residential areas and town centre streets.

Because of the orbital alignment of the greenways in Westport, the network does not always offer the most direct route for journeys within the town and therefore doesn't encourage modal shift. This perception fuels the perception that the greenways have been provided as a tourist attraction rather than for the benefit of those who live in the area to use it on a daily basis and possibly also the view that they are



⁴⁵ Note that data used is for 2015 as a significant amount of data were missing for 2016 and 2017 at most sites in Westport due to counter errors

FIG 6.10: LOCATIONS OF WESTPORT AUTOMATIC COUNTERS REFERENCED



Pre-Existing Infrastructure

STA Infrastructure Project

Eco-counter Location

1 POST A TRACK A, SPRINGFIELD ESTATE

2 POST AT SKATEPARK, WEST ROAD



Reflecting these results, intercept surveys conducted at five locations⁴⁶ on the Westport greenway network in May 2015 suggested that the facilities were primarily used for leisure trips (Figure 6.14). Sixty-percent of respondents stated that they were ‘just out for a walk or cycle’ reflecting the use of greenways for leisure trips in their own right. Other leisure or personal trips accounted for a further 11% and tourism 19%. Only 10% of interviewed users were making employment or education related trips.

Despite these results, the greenways are highly valued by the community and residents felt that the infrastructure had transformed the town. Qualitative evidence also shows that, since the WST programme commenced, the Greenways have become more accepted and their use has become an everyday part of the lifestyles of local residents.

⁴⁶ Survey locations included two separate locations on the main ‘Westport Town Greenway’ link to the south of the town centre and one each on the link to Knockranny, on the Allergan Road (Carrowbeg Estate) and on the Northern Greenway.

FIG 6.14: PURPOSE OF TRIPS ON WESTPORT GREENWAY, INTERCEPT SURVEY MAY 2015

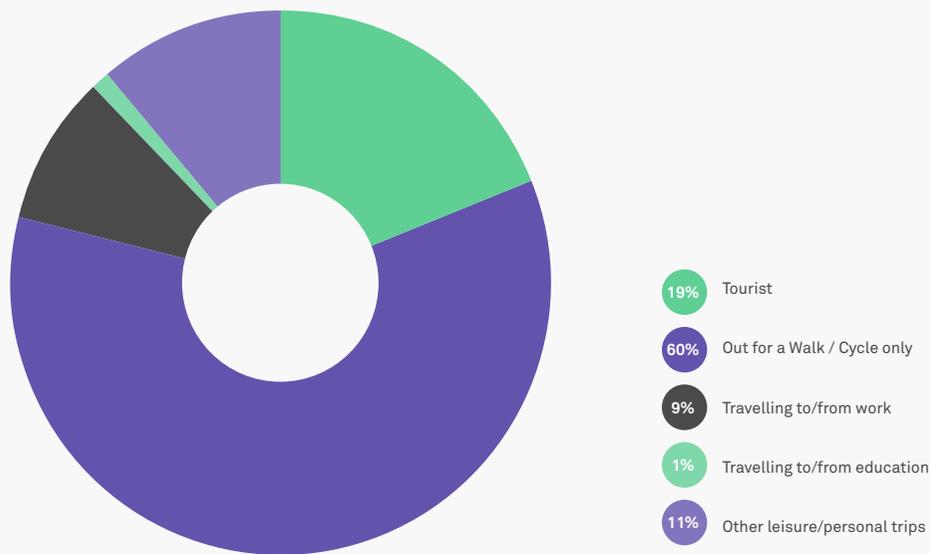


FIG 6.11: POST AT SKATEPARK (WEST ROAD), 2015 AVERAGE PEDESTRIAN COUNT BY TIME BAND

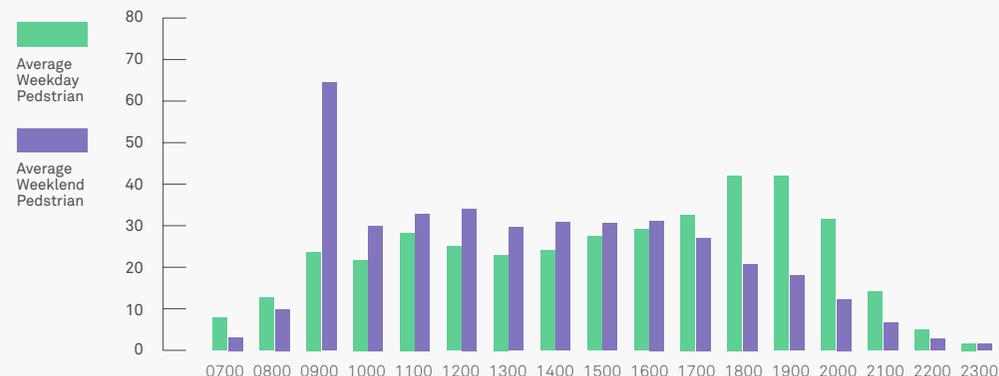


FIG 6.12: POST AT SKATEPARK (WEST ROAD), 2015 AVERAGE CYCLIST COUNT BY TIME BAND



FIG 6.13: POST AT TRACK A, SPRINGFIELD ESTATE, 2015, AVERAGE PEDESTRIAN COUNT BY TIME BAND



Lessons Learnt



“When they first opened the railway line I was about the only person walking and cycling on it but now it’s wedged so it’s becoming more fashionable”

– Commuter Focus Group, Westport

The greenways in Westport are also seen to have been instrumental in encouraging people who lacked the confidence or skill to cycle on the road to begin cycling. Although the level of change was relatively low in Westport, such evidence supports the influence of infrastructure on perceptions of safety.



“The thing that got me cycling was the Greenway for safety reasons. On the Greenway you’re not worried about traffic and holding cars up but on main roads I don’t feel comfortable.”

– Commuter Focus Group, Westport

However, it was evident that investment in the greenways has not contributed substantially, to date, in encouraging an increase in walking and cycling for commuting in Westport. This is despite the fact that the greenways connected to a large proportion of the town’s workplaces. Various reasons were suggested for this by residents, including:

- The weather;
- The need for multiple trips by car;
- Steep gradients throughout Westport;
- The weight of school bags and equipment;
- The lack of facilities at trip destinations; and
- Inertia/habit.

“Westport is in a valley so no matter where you are cycling you’ve got to go up big hills”

– Commuter Focus Group, Westport

“I’m at the top of a hill so I would need an electric bike. I could cycle down but I would be walking back up. Some of the hills round here are desperate.”

– Image Focus Group, Westport

Key lessons learnt are as follows:

- Provision of an integrated network of segregated infrastructure does not necessarily guarantee modal shift. Behavioural change measures and more ‘sticks’ such as parking charges are necessary, especially in areas where congestion is not a significant issue.
- If greenways are being constructed to influence commuting trips, they need to be constructed along commuting desire lines.
- Infrastructure investment should optimise alignments with gentle gradients to make cycling more attractive.

ON-ROAD CYCLING INFRASTRUCTURE

Outcome of On-Road Cycling Infrastructure

Intervention Objectives

The main objectives of providing on-road infrastructure were:

- To create a safer and slower public realm; and
- To promote walking and cyclist as the preferred modes of travel.

Interventions Delivered

Just 1.6km of on-road cycling facilities were delivered as follows:

- The N5 Castlebar Road from the town centre to the north east, providing safer facilities for cyclists on this busy arterial route;
- The Carrowbeg Estate/Allergan Road adjacent to the Great Western Greenway extension to IDA business park (combination of on-road and off-road); and
- Altamont Street/Mill Road at the eastern end of the Westport Town Greenway (combination of on-road and off-road). However, overall only 1.6km of cycle lane and cycle track was delivered.

With less than 2km of on-road cycling infrastructure being delivered in Westport, its ability to influence travel behaviour and attitudes was limited. Two of the bi-annual monitoring sites were located on or adjacent to these facilities; on Castlebar Road and Altamont Street/Mill Road. However, at both of these sites, fewer cyclists were recorded on the two count days in October 2016 than had been recorded during the October 2013 counts, (despite similar or better weather during the October 2016 counts). In contrast, vehicular traffic remained relatively constant at these sites between count periods.

Similar to other STAs, there were safety concerns about sharing road space, and traffic volumes on the approach roads to Westport town centre are perceived by residents to be high. Roads in the town centre were often heavily congested, made worse by the fact that many of the roads are narrow and therefore do not create a good environment for cyclists. These issues became especially acute during the summer months with high visitor numbers.

“It’s not physically possible to change the roads in old towns to create walkways or greenways, the infrastructure’s not there. The one way systems have been a major improvement but the town’s not big enough to do it.”

– Parents Focus Group, Westport



Castlebar Road



Altamont Street

Lessons Learnt

To compound this, many approach roads to Westport are local rural roads which are perceived as being in poor condition and with no footpaths or lighting to encourage walking and cycling. These roads were considered by residents to be a constraint to accessing facilities which have been developed and to modal shift considering the wide catchment area of the town.

“The Greenway is great for walking but the roads in and out of Westport can be difficult and dangerous. Some of them have no pavement so when trucks come you’re climbing up the hedge and they are badly lit at night”

– *Commuter Focus Group, Westport*

“I can get onto the Greenway from where I live but to get to town I have to compete with all the traffic. I don’t think we have the infrastructure built into our roads.”

– *OT Focus Group, Westport*

The limited delivery of cycle facilities along main approach roads and within the town centre, as well as the limited delivery of speed reduction measures on approach roads appears to have contributed to the outcome that despite the popularity of the Greenway network for recreation, perceptions of the safety and convenience of cycling for utility purposes have not substantially improved.



TRAFFIC AND PARKING MANAGEMENT

Intervention Objectives

The main objectives of the traffic management and parking measures were:

- To create a safer and slower public realm in the town centre; and
- To promote sustainable transport modes for all trip types.

Interventions Delivered

There was limited investment in traffic and parking management in Westport. The main schemes delivered include:

- **Town centre traffic calming:** Eighteen new raised tables/crossing points were installed to reduce speed and facilitate easier pedestrian movement. In addition, zebra crossings were installed on James Street and Altamont Street. Other traffic calming included twelve new road ramps. Toucan crossings have been provided on the N5 Castlebar Road and on the N59 Newport Road.
- **Traffic and urban realm improvements in Westport Quay:** These works, completed in the second half of 2014, involved the reconstruction of the through road at the Quay and the reallocation of road space to create increased footpath width/plaza area along the shopping area. The pedestrian area was repaved with decorative paving and raised crossings were provided to slow through traffic. The number of car parking

spaces provided was reduced and new high quality bike parking and additional disabled persons parking was provided.

There was opposition to some traffic and parking management proposals outlined in the Smarter Travel bid. This resulted in a virtually unchanged road network within the town centre with limited visible signs of ‘Smarter Travel’. This opposition highlights the entrenched support for car access and the difficulty in influencing mind-sets regarding Smarter Travel, despite demonstration town status. For example, the proposed introduction of Pay and Display parking within the town centre and the 30KPH speed limits were not delivered due to concerns raised by stakeholders.

Outcome of Traffic Management and Parking

Although there was limited investment in traffic management and parking, the interventions delivered have resulted in some safer crossings and junctions for pedestrians and cyclists. However, the overall impact on the mind-set and modal choices has been minimal, with the town centre still being identified as a key barrier to Smarter Travel, especially for cyclists.

“In the centre of town the pedestrians don’t want you on the footpaths and the drivers on the streets don’t want bikes in their way and they’re hooting.”

– *Image Focus Group, Westport*

“Around town you’re more likely to walk, there’s no point taking the bike because there’s no bike lanes and it’s so congested you just get stuck in traffic, even on a bike.”

– *Commuter Focus Group, Westport*

Qualitative research was undertaken with businesses in the Westport Quay area to understand the impact of investment made. The feedback received was positive. Businesses felt they were well briefed on the proposed works and the plans for construction which was identified as being very helpful in terms of business planning. It was acknowledged also that there was resistance to the proposals initially and that businesses were quieter than usual during construction. However, all participants were happy with the final outcome. The scheme is perceived to have increased business activity in the area as a number of new businesses had opened in the area, possibly on the basis the area is now more attractive. The works were also perceived to have reduced traffic speeds and improved the area for pedestrians and cyclists.

“Anecdotally more people are stopping that drive along the key, so for every ten cars that used to go along, maybe three of them would stop and maybe now it’s four or five and those that stop seem to stay for longer”

– *Westport Quays Focus Group*

“My memory of it was dark and wet and now it’s bright and spacious and well planned. It’s totally transformed the look of the Quay”

– *Westport Quays Focus Group*

“Yes, it’s safer as well with the speed humps, you know, because it did used to be a race track before, a little bit and so it’s much safer and it’s pleasant to walk there. People, I think are congregating there and they’re saying, well, let’s meet at the Quay, because they can actually walk in comfort”

– *Westport Quays Focus Group*

Lessons Learnt

The main lessons learnt for traffic calming and parking in Westport were:

- Greater support for Smarter Travel measures is needed, especially those that might impact car drivers, otherwise it is difficult to achieve project objectives.
- There are clear and positive benefits of early engagement with businesses on infrastructure schemes.

[6.4.3.1 Summary of Infrastructure Outcomes](#)

The WST infrastructure programme was composed mainly of greenway projects. These are highly valued by the community, but mainly for recreational use. Among other factors unrelated to the infrastructure, the orbital nature of the greenway network and steep gradients on some access points have resulted in limited use of the greenways for trips to work and education.

The delivery of traffic calming and urban realm works was generally restricted to the town centre and Westport Quay area, with limited changes implemented on the main approach roads to the town. This was despite the fact that traffic speed on these roads had been recognised as problematic in the original bid for Smarter Travel funding. Although these works improved actual and perceived safety in these specific locations, delivery of these measures was not sufficient to overcome perceived safety barriers to walking and cycling. This was reflected in the HTS results, which did not demonstrate any statistically significant improvement in the perceived safety of walking or cycling. This was also reflected within the qualitative research as safety continued to be raised as a significant concern by residents.

Changes in mode share are also closely linked with the WST behavioural change programme set out in the next section.



6.4.4 Behavioural Change Investment Outcomes

Behavioural change investment in Westport was intended to improve the image, awareness and attractiveness of Smarter Travel modes and increase cycling confidence for adults and parents. As noted previously, only 4.8% of the STA budget was expended on non-infrastructure measures. The main initiatives put in place were:

- School travel planning;
- Events;
- Operation Transportation; and
- Marketing campaign.

The scope and outcomes of these measures are outlined below, presenting the following information:

- Intervention objectives;
- Interventions delivered;
- Outcomes and impacts, focusing on the contribution narrative; and
- Lessons learnt in terms of transferability and scalability.

SCHOOL TRAVEL PLANNING

Intervention Objectives

The main objectives of providing School Travel Planning were:

- To encourage parents and children to walk and cycle more; and
- To reverse the trends of car-based trips to school.

Interventions Delivered

WST seconded two employees from the An Taisce Green Schools Programme on a part time basis to deliver that element of the behavioural change programme. All Westport schools were involved in the WST programme and there was recognition among parents that it plays an important role in educating children about sustainability, particularly in primary school. The An Taisce officers engaged with all primary and secondary schools and all schools became actively involved with WST. The officers provided the following assistance to schools:

- Support in organising their own events;
- Provision of information, such as through bespoke WST school newsletters prepared for each school;
- Support and resources; and
- Organised events and competitions for multiple schools.

The schools programme encompassed a wide variety of events, challenges and competitions aimed at promoting sustainable travel. Examples of competitions organised for primary schools included a 'Greenest Class' travel challenge and a 'We Love Westport Smarter Travel Week' photo competition. Secondary schools were invited to participate in the team based 'Operation Transportation' travel challenge in 2015 and 2016 and also organised their own internal travel challenges such as the 'Supersmart Mover' competition in the Sacred Heart School. To coincide with the 'Daylighted Campaign' which was organised throughout Mayo at the beginning of winter each year, fancy dress competitions were organised by WST in schools to promote the wearing of luminous and reflective clothing by cyclists and pedestrians in winter.

'Westport Walks Weekdays' promotion days were held regularly throughout the year and were often tied to community wide promotion of Smarter Travel. For example, on a number of occasions secondary school pupils from the Sacred Heart School rewarded walkers and cyclists travelling to work and school with small treats, 'thank you' stickers or flowers. Many school activities were organised to combine with other community wide events such as European Mobility Week in September and the Spring Forward festival organised in April. Events were also organised each year during national 'walk to school' week in May and 'scoot to school' week in March.

Other schools programme activities included:

- Cycle training delivered in both primary and secondary schools;
- School gate analysis activity conducted by secondary school pupils;
- Greenway walks and cycles;
- Designation of specific carparks around Westport as 'Park 'n Stride' locations, including promotional signage;
- 'Walkable Westport', where pupils measured the time taken to walk to school from various locations;
- Parent and teacher seminars delivered in each school to gain support for WST;
- Regular 'book free homework' days organised;
- Pannier rental scheme offered to secondary schools; and
- A Smarter Travel mascot 'Sir Walk-a-Lot' was created for WST and made regular appearances at both school and wider community events.

Outcome of School Travel Plans

The impact of the School Programme has been assessed through an analysis of Census data from 2011 and 2016 on pupils' usual mode of travel to school, as well as through baseline and follow-up surveys within schools and through qualitative research.

Using the Census data, changes in mode share amongst school pupils resident in the Westport STA can be compared against changes in the nearby towns of Castlebar. The data shows a decrease in car mode share in Westport at both primary (-5.2pp) and secondary levels (-1.5pp). Compared with Castlebar, the car mode share baseline in 2011 is lower in Westport and the recorded change up to 2016 is higher for both primary and secondary school trips.

Walking mode share amongst primary school pupils increased in both Westport and Castlebar by 5.1pp, albeit with a lower baseline in Castlebar. There was no increase in cycling mode share in Westport for trips to either primary or secondary school and cycling mode share at secondary level is low at 0.3% in 2016.

School travel surveys which were undertaken at all participating primary and secondary schools provide a secondary source of information on modal shift. Results of the Census and the school travel surveys cannot be compared directly due to the different timing of surveys and the different samples involved. In addition, caution is generally advised when interpreting the results of self-reported surveys of children due to the possibility of response bias.

Results of the school travel surveys suggest that positive modal shift occurred over the period of the STA programme, particularly at primary school level. There was a reduction in the combined mode share of car and PAS of 6.7pp for primary schools and 5.9pp for secondary schools between 2012 and 2016. Walking mode share increased by 2.8pp at primary schools and 6.4pp at secondary schools while cycling increased at primary level by 5.4pp, but no change was recorded at secondary level.

While the census results are the main source of quantitative evidence on school travel planning outcomes, qualitative evidence is valuable in understanding the factors which influenced or acted as a barrier to modal shift for the trip to school and also highlights additional positive outcomes of the schools programme.

An observation among parents of children attending schools in Westport was that the STA activities appeared to be organised in an arbitrary way, with no specific schedule for cycle training and insufficient notice regarding activities. Some parents felt that the importance and priority associated with the WST activities at schools was dependent on the views of each school or specific teachers within the schools. Despite this, there was support among parents to sustain the activities throughout the school term.

TABLE 6.10: USUAL MODE OF TRAVEL TO PRIMARY SCHOOL (CENSUS, 2011 – 2016)

	Westport Urban Area		Castlebar Urban Area	
	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	57.5%	-5.2	68.6%	-2.9
Walk	30.1%	5.1	20.6%	5.1
Cycle	3.7%	0.0	0.4%	-1.1
Bus/Rail	7.5%	-0.8	9.8%	-1.4
Other	1.2%	1.0	0.6%	0.3
Total (n)	492		987	

TABLE 6.11: USUAL MODE OF TRAVEL TO SECONDARY SCHOOL (CENSUS, 2011 – 2016)

	Westport Urban Area		Castlebar Urban Area	
	2016	PP Change from 2011	2016	PP Change from 2011
Private Car	38.8%	-1.5	58.5%	5.9
Walk	43.1%	-0.8	36.1%	-3.3
Cycle	0.3%	-0.4	0.9%	-1.3
Bus/Rail	17.1%	2.5	4.1%	-0.5
Other	0.7%	0.3	0.3%	-0.9
Total (n)	304		632	

“It might not happen every year, I suppose it depends on the teacher. The teacher my son had last year was very big on Smarter Travel.”

– Parents Focus Group, Westport

Some parents acknowledged that their children were now more likely to cycle or walk to school on a more frequent basis.

“My son was awfully excited to cycle to school with his classmates. It was a big thing for him.”

– Parents Focus Group, Westport

“My daughter is the Green School rep and they make posters and she’s very excited about it. It’s important to get it into them at primary school because I don’t know if it’s continued to secondary school but teenagers are often rebellious and can’t be bothered.”

– Parents Focus Group, Westport

However, despite this general level of support, the attitude of parents in relation to modal choice was still heavily dependent on their perception of safety and the infrastructure available. A minority of parents in the focus groups also expressed resistance to the promotion of walking and cycling on safety grounds.

“It’s all very good the schools promoting walking to school but when there’s no infrastructure in place for them to walk safely, they’re stupid to promote it”

– Parents Focus Group, Westport

Overall, evidence of the impact of school travel planning in Westport was positive, despite varying impressions of the level of impact. The provision of cycle training in particular is perceived as very valuable in equipping future generations for modal shift.



Lessons Learnt

Lessons learnt from school travel programme in Westport were as follows:

- A bespoke approach to responding to the Smarter Travel barriers in each school is required;
- It is important to ensure that the activities are delivered in a co-ordinated way, through a well-structured programme. This assists in building momentum and continuity between activities;
- Planning of new and relocated schools needs to be sensitive to the impact on travel patterns; and
- The delivery of behavioural change measures needs to be in parallel to the provision of safe cycling facilities adjacent to schools, to assist in overcoming the safety concerns of parents. Cycle training for children also has a complementary part to play in this process.





Westport Smarter Travel & Gnó Mhaigh Eo present

CULTURE NIGHT

Bike Buffet

Bigí linn don Oíche Chultúir!

DÉ HAÓINE, AN 16 MEÁN FÓMHAIR
FRIDAY 16th SEPTEMBER, 6.30pm

Léim ar do rothar agus bain sult as drámaíocht, ealaín, ceol, damhsa agus bia blasta!

Mean in Westport Town Hall to enjoy a month which starting a steady peak of the newly written play for the 5th of August. Meet the author, John, and his family.

There are also plenty of other things to enjoy some of the Culture Night entertainment with comedy from The Helix, dance on the beautiful grounds of Westport House, in the west stop for a BBQ and cash prizes heading into the Westport for the night, drinks and other surprises.

Bring your rothar, helmet, hi-vis, lights, a hungry belly and your cúpla focal!

Costas: Saor in aisce
Teacht le chiall | Meeting point: Westport Town Hall
Book your place by Wednesday 14th September
Gnó Mhaigh Eo 094-9010140
(Limited spaces available)

EUROPEAN MOBILITY WEEK

FRIDAY 15th - SUNDAY 24th SEPTEMBER 2017
WESTPORT EVENTS

Join Westport Smarter Travel as we celebrate EU Mobility Week

MONDAY 15th	Launch of European Mobility Week and the European Campaign
WEDNESDAY 16th	'Carbon Walk' - an event to help promote the benefits of walking and cycling to work, school and university
THURSDAY 17th	Business Bike Day - (Sunday 10th The Helix)
FRIDAY 18th	Event at Westport (WPH, Wednesday 17th) and at the WPH (19th) - a special 100th anniversary event
FRIDAY 18th	Parking Day - a special event to promote parking and the use of public transport
MONDAY 22nd	Green and up to date on 'World Car Free Day' and will also be done in connection with the Green and up to date on 'World Car Free Day'
WEDNESDAY 24th	Carsharing Night - a special event to promote car sharing and the use of public transport
WEDNESDAY 24th	WPH, Cycle, Carpool and the use of public transport
WEDNESDAY 24th	WPH, Cycle, Carpool and the use of public transport

Workshops, launch of new infrastructural projects and competitions will also be held throughout the week.

Sharing Gets You Further
- film, shared and intelligent mobility
www.esmobilityweek.ie

ALL EVENTS ARE FREE!

See our website www.westportsmartertravel.com and Facebook page, or phone 087 2 471840 or email Westportsmartertravel@gmail.com for more information.

EVENTS

Intervention Objectives

The main objectives of the events programme were:

- To promote the use and benefit of smarter travel modes;
- To address perceived barriers to walking and cycling; and
- To complement other activities to assist in influencing travel behaviour.

Interventions Delivered

Events were a very strong aspect of the Westport programme, with a regular calendar of events throughout the year, including:

- The first 'Bike Buffet', a relaxed cycling event stopping off at multiple dining venues along the route, was first held in 2013 and proved extremely popular. It became a regular feature on the events calendar, with dates commonly chosen to tie into other events, and venues changing regularly in order to involve different local businesses. It was subsequently given a silver award at the 2016 Irish Responsible Tourism Awards;
- The WST 'Spring Forward' festival took place over one week each April from 2014 onwards and involved the promotion of a range of community and school activities in a coordinated way. For example, in 2016, the festival week included the 'Operation Transportation' awards ceremony, workshops, a 'walk to church' promotion, a greenway walk, school competitions and the first night of a four week cycle training course;
- 'We Love Westport Smarter Travel Week' was organised for the first time in February 2014 to coincide with Valentine's day and invited people to show how much they love walking, cycling, carpooling and taking public transport. A Smarter Travel Valentines limerick/poster competition was organised in schools;
- 'Westport Walks Weekdays' was originally initiated in 2009 as part of the Green Schools Programme under 'Westport Walks Wednesdays' banner. During the Smarter Travel programme, it was relaunched as 'Westport Walks Weekdays' and was promoted numerous times each year. While originally a schools initiative, as part of the Smarter Travel Programme it was also targeted at the wider community;
- European Mobility Week was promoted each September and a varied programme of events was organised including community walks and cycles, bike buffet events, school activities, 'Park-ing' day (where a parking space is transformed into a mini parklet), and a 'Human Powered Cinema' event;
- The 2015 'Smarter Travel Flashmob' dance was held during European Mobility Week in 2015 to celebrate the achievements of WST;

Outcome of Events and Challenges

- Greenway walks/cycles were organised on a few occasions each year and some of these had particular themes and involved collaboration with other groups. For example, the 'Edible greenway walk' was organised with 'Leave No Trace Ireland' and 'Edible Landscapes'; and
- Launches and award presentations for other aspects of the WST programme which were ongoing over a longer period.

In 2016, 16% of HTS respondents in Westport said they had previously attended a Smarter Travel event which is a positive outcome. However, while attendance at Smarter Travel events helps to raise the profile of Smarter Travel there is no indication that it impacts modal shift.

To understand the impact of events in Westport on modal shift, intercept surveys were undertaken at a Bike Buffet event. Overall, feedback on the event was very positive with attendees welcoming the innovative event which gave them an opportunity to take out their bikes and use the greenways while also sampling local produce. Attendees were asked whether participating in the event would encourage them to cycle more often to work or college. As the survey sample was quite small, it is not possible to quantify the outcome. However, the feedback was positive. Some attendees felt the event would encourage them to consider buying a bike because the event encouraged them to recall the enjoyment for cycling. Others felt the event had encouraged them to cycle more often. Similarly, a participant at an unrelated focus group as part of this evaluation had started cycling more often as a result of attending the Bike Buffet.

The success of the Bike Buffet demonstrates that suitably targeted 'fun' events are an effective and cost efficient way of encouraging adults to 'trial' or increase cycling.

"I did a Bike Buffet which was brilliant and it got me cycling again. I hadn't been on a bike in about 10 years."

– Commuters Focus Group, Westport

There is similar evidence from focus groups of the impact of the wider events programme on travel patterns with participants at various focus groups in Westport citing WST initiatives for having commenced either walking or cycling to work.

"There's more initiatives and the number of cycling and fitness groups have skyrocketed in the last year. I am not sure where it has come from but everyone has definitely noticed it."

– Image of Smarter Travel Group, Westport

"I'm ashamed of this but for 15 years I drove every day across town but Operation Transportation changed my mindset and made me more thoughtful about just sitting in the car."

– Operation Transportation Focus Group, Westport

There is also evidence that events in Westport, and other STAs, are not sufficiently targeted at people who currently do not walk or cycle and that the events are often attended by the same people who are willing participants with regards to Smarter Travel. Events should ideally target more hard to reach groups to influence a further increase in modal shift.

Lessons Learnt

The following overarching lessons were identified through the delivery of the events programme:

- A regular programme of events can raise the profile of Smarter Travel significantly and cost effectively.
- While all participants should be welcomed, events need to specifically target groups that demonstrate a willingness to change but haven't to date.

OPERATION TRANSPORTATION

Outcome of Events and Challenges

Intervention Objectives

The main objectives of Operation Transportation were:

- To promote the use and benefit of smarter travel modes;
- To address perceived barriers to walking and cycling; and
- To complement other activities to assist in influencing travel behaviour.

Interventions Delivered

‘Operation Transportation’ was a team based sustainable travel challenge organised by WST. Initially, the challenges focused on workplaces and community groups, but in the final year, all members of the community could enter teams. The aim of Operation Transportation was to challenge participants to choose sustainable travel modes for as many of their daily journeys as possible during a five or six week period. Participants logged all journeys made by smarter travel modes and coordinators reported the total smarter travel journeys for their team to WST on a weekly basis. As well as awarding overall prizes at the end of the challenge, WST distributed ‘inspirational people’ awards, spot prizes and photo prizes during each challenge.

While conventional workplace travel planning was not successful in Westport, the Operation Transportation Challenge was perceived as a successful initiative and could perhaps be used as a mechanism elsewhere to encourage walking and cycling where limited resources are available. Among those who participated there is evidence of an increase in use of sustainable modes, at least on a regular if not daily basis.

While no quantitative information was collected with regards to modal shift by individual participants in the challenge, overall participation statistics indicated a very significant level of town wide involvement. For example, during the first challenge in 2014, 320 participants from eighteen organisations logged over 16,500 smarter travel journeys.

To understand more about the impact of Operation Transportation, AECOM organised a focus group for participants who had administered the challenge on behalf of their organisation or team. Even allowing for the fact that focus group participants who had a more involved role in the challenge as team leaders/coordinators are likely to have a positive attitudinal bias in favour of Operation Transportation, there were clear indications that Operation Transportation had been a proactive way of encouraging people to walk and cycle for everyday journeys. The approach also challenged initial negative perceptions associated with walking and cycling for commuting purposes.



“One of the failings of Smarter Travel is that people now walk and cycle more for recreation but it hasn’t changed their journeys to work or school but that’s why Operation Transportation is amazing because it’s about people travelling to work.”

– OT Focus Group, Westport

“Two years ago there used to be only one or two bikes in our shelter and since we did Operation Transportation it’s full so that has completely changed.”

–OT Focus Group, Westport

“At the beginning people were saying the weather would be too bad but at the end they were saying they never got wet on the way to work but just presumed they would.”

– OT Focus Group, Westport

Lessons Learnt

A small number of respondents even reported that financial or commercial benefits of walking and cycling had become apparent to them as a result of participating, including one who claimed it helped her realise she could manage without her car.

“I had a car and got rid of it because it became dormant as I found it was easier and quicker to walk down to the town.”

– OT Focus Group, Westport

Operation Transportation emerged as one of the most successful individual elements of the Smarter Travel programme, and has strong potential to be implemented in other areas. However, as outlined above, there is scope to improve certain aspects of how the challenge is implemented in order to realise its full potential. In particular:

- There is evidence that cost effective team challenges have a positive impact on modal shift.
- The process of collecting data could be improved in future through increased application of smart technology.
- Although feedback from participants and coordinators on the impact of Operation Transportation was very positive, quantitative data demonstrating the effectiveness of the challenge in achieving modal shift amongst specific individuals is lacking. To better understand such impacts in future, it would be beneficial if organisers of similar challenges could collect more information on the travel habits of participants, such as their ‘usual’ mode for key trip types at the beginning of the challenge and how the number of trips they make by sustainable modes changed over the course of the challenge.



MARKETING AND PROMOTION

Intervention Objectives

The main objectives of Marketing and Promotion were:

- To raise the profile of smarter travel opportunities in Westport; and
- To promote the benefits of walking and cycling.

Interventions Delivered

A wide marketing and promotion campaign was delivered in Westport, mainly through print and social media. Limited resources meant that the main focus of activity was either on the schools programme, or events and challenges, both of which generated a significant level of interest in the local media. A good website was developed and there was an active social media presence for the programme. A ‘greenway map’ produced by WST proved popular with residents and visitors and was published online and distributed through local hotels. Smarter Travel was also promoted to visitors through the ‘Destination Westport’ website.

Outcome of Marketing and Promotion

It is not possible to measure the impact of marketing and promotion on the behavioural change identified, however, based on the qualitative research (focus groups) undertaken in each area (presented in Appendix E), awareness of Smarter Travel in Westport was highest among all STAs which is a good indicator of success of these measures.

Whilst the marketing and promotion of specific behavioural change activities and of the greenway network was strong, communication about the progress of infrastructure delivery and how various projects were prioritised appears to have been much less frequent. As a result, feedback from focus group participants in Westport was often sceptical of the cost of the Smarter Travel programme and how it was invested. This impact could have been avoided through more robust communications.

“We were very hopeful for Smarter Travel. There was going to be great infrastructure in town and it hasn’t really come to the fore. There was a fantastic plan but I haven’t seen it come to fruition. We identified sites for park and ride but none of it happened.”

6.5 Conclusion: Impact of Smarter Travel in Westport

Evaluation of the Westport Smarter Travel programme has demonstrated that changes in mode share have been impacted by investment in both infrastructure and behavioural change measures. A summary of modal shift at a trip level and the key factors contributing to change are summarised in Table 6.12. The Logic Map shown in Figure 6.15 provides an update of programme delivery in Westport; only programme measures which have been fully delivered are included in the map.

The HTS results show slight but positive impacts on modal shift which are higher in the WST area than changes recorded in the National Travel Survey (excluding Dublin). Car mode share for all trips reduced by 1.8pp to 66% in 2016, while there were increases of 3.1pp in walking and 0.9pp in cycling. Positive changes were observed across employment trips and non-commuting trips, although escorted education trips experienced an increase in car modal split since 2012.

For all trip types, there was evidence of a higher shift from car to walking and cycling between 2012 and 2014, before an increase in car mode share between 2014 and 2016. Increases in car mode share since 2014 for most trips may reflect the improved economic circumstances in Westport with the proportion of people in the HTS sample who were working increasing from 55.8% in 2014 to 61.5% in 2016. Within

socio-economic group 'E' (low income workers, unemployed and pensioners), private car use declined significantly by 10.6pp and the mode share of walking increased significantly by 14.4pp.

A significant amount of investment in greenway infrastructure in Westport and the wider area was made in advance of the launch of the Smarter Travel programme. Infrastructure made up 96% of the overall expenditure on Smarter Travel in Westport, with a focus on the provision of off-road greenways, cycle tracks and public realm improvements. As a result, improvements were recorded through the HTS in the perceived safety, convenience and attractiveness of walking and cycling in the town. Within the WST programme, improvements to infrastructure were central to encouraging modal shift from car to sustainable modes

This investment in infrastructure has led to a minor (+0.9pp) overall increase in mode share for cycling, although the increase in mode share for walking (+3.1pp) has been more positive. Despite the investment in infrastructure, there is a perception in Westport that the greenways delivered are not always the most convenient option for trips because of their orbital arrangement and steep gradients, while on-street routes do not currently provide an attractive alternative, with the current traffic volumes and speeds.

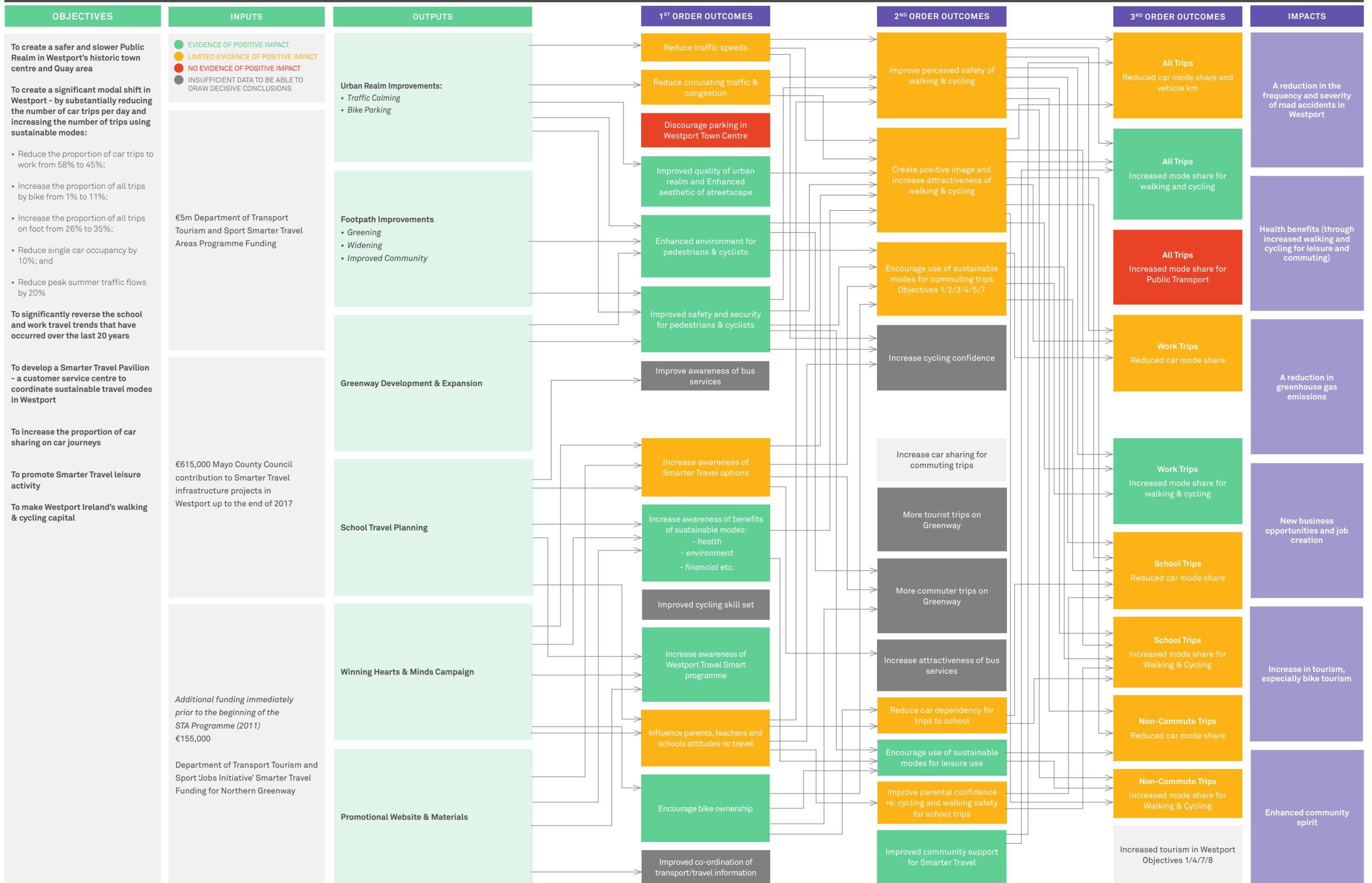
School travel planning and events and challenges organised as part of the 'Winning Hearts and Minds' campaign have improved the image and awareness of Smarter Travel modes. Despite this, evidence of modal shift in Westport has been mixed, with the HTS showing a 4.1 pp increase in car mode share for escorted education trips since 2012, while Census results

showed a 2.6pp decrease between 2011 and 2016. Overall, evidence of the impact of school travel planning in Westport was positive, despite varying impressions of the level of impact. The provision of cycle training in particular is perceived as very valuable in equipping future generations for modal shift.

TABLE 6.12: SUMMARY OF MODAL SHIFT IN WESTPORT AND KEY CONTRIBUTING FACTORS

Trip Type	Gross Modal Shift 2012–2016	Contributing Factors
All Trips	Car: -1.8pp to 66.0% Walking: +3.1pp to 27.4% Cycling: +0.9pp to 2.3%	Infrastructure improvements, particularly the greenway network, have improved perceptions of safety and trip comfort for some trips. The 'Winning Hearts and Minds' campaign has improved the image and awareness of Smarter Travel modes.
Work	Car: -3.1pp to 67.5% Walking: +3.9pp to 24.9% Cycling: +1.9pp to 2.5%	Infrastructure measures provide direct connection to a major employment area (Allergen & IDA Business Park) There is strong qualitative evidence that Operation Transportation encouraged participants to trial walking and cycling for work trips and other journeys during the challenge, with a resulting improvement in perceptions of walking and cycling in comparison to driving.
Escorted education	Car: +4.1pp to 87.3% Walking: -5.3pp to 10.0% Cycling: No change recorded	Negative change for escorted education trips recorded through the HTS but more positive results for all education trips in the census, particularly at primary school level (census shows +5.1pp increase in walking mode share amongst primary school pupils). The greenway and other investment in infrastructure has improved access to schools from some residential areas, while the schools programme has generally improved the image and awareness of smarter travel modes amongst pupils and parents.
Non-Commuting	Car: -0.5pp to 63.7% Walking: +2.6pp to 29.9% Cycling: +0.9pp to 2.5%	The greenway network is highly valued by the community for recreational walking and cycling. An improved image of Smarter Travel may also have contributed to modal shift for some other non-commuting trip purposes.

FIG 6.15: IMPACT OF BEHAVIOURAL CHANGE INVESTMENT IN WESTPORT SMARTER TRAVEL AREA



7

Programme Impacts



7.1 Introduction

Sections 4, 5 and 6 of this report have described the implementation, outputs and local outcomes of the Smarter Travel pilot programme in Dungarvan, Limerick and Westport. This section draws together the evidence gathered in each of the pilot areas, the comparator areas and from nationwide data sources to identify and measure the impacts of the programme as a whole. An overview of the programme outcomes across the three pilot areas is presented which is considered in the context of benchmarking with comparable programmes in other areas. It then considers the range of wider and longer terms impacts associated with the programme, specifically:

- Quality of life;
- Health and physical activity;
- Safety;
- Environment; and,
- Economy.

This set of wider and long term impacts align closely with the objectives set for investment in each of the three pilot areas, as outlined in Figure 7.1.

This section concludes with an economic appraisal which draws together the programme impacts in a monetised appraisal in line with the standards and guidance in the Public Spending Code.⁴⁷

FIG 7.1: SUMMARY OF STA PROGRAMME OBJECTIVES		
Dungarvan	Limerick	Westport
Improving the health and well-being of residents	Improving cycle safety in the town centre	Creating a safer public realm
Reducing the number of road traffic collisions	Promoting smarter travel as the healthiest way to travel	Promoting smarter travel leisure activity, particularly cycling
Improving air quality	Reducing short car-based trips and thereby associated environmental impacts	Reducing car-based trips and associated environmental impacts
Enhancing the green economy and reduce greenhouse gases		

7.2 Programme Outcome Overview

The programme level results, and the detailed findings for each pilot area, reveal a number of interesting features and trends that have important implications for the design of future programmes, outlined in the following sections.

7.2.1 Different levels of impact on men and women

The STA programme has resulted in a decrease in car mode share and an increase in the mode share of walking and cycling. Change was observed among both men and women, however, the effect of the programme was significantly greater for men than women, as shown in Table 7.1.

Before the programme, car mode share was marginally higher among women (72%) than men (69.5%). During programme delivery, the gap in car mode share between men and women increased with men more likely to increase both walking and cycling as a result of the measures delivered.

Walking had a higher mode share among women (22%) than men (18.6%) before the programme but after delivery this situation reversed, with walking now having a marginally higher mode share among men than women. In addition, cycling mode share among men was significantly greater than women before the programme (3.5% and 1.2% respectively) but

the programme had a greater impact on men and as a result this gap has widened further (5% and 1.5% respectively).

The difference in response between men and women has important implications for future programmes. It suggests that behavioural change measures targeted at men may be more effective in the short term. More importantly, the findings suggest that there are differences in travel preferences between men and women which mean that achieving change in travel behaviour across all of society will require:

- Identification of the issues that weight women's mode choices towards cars and away from cycling; and
- Design of measures that specifically address these issues and reflect the key motivators for behaviour change by gender.

⁴⁷ The Public Spending Code is published by the Department of Public Expenditure and Reform and can be found online at: <http://publicspendingcode.per.gov.ie/>

7.2.2 Different levels of impact across socio-economic groups

The programme had varying levels of impact on different socio-economic groups. In particular, individuals in groups 'D' and particularly 'E' responded more to the programme than individuals in groups 'A', 'B' and 'C'. Table 7.2 summaries some key findings from Section 3 for all trips.

The changes in mode share are broadly consistent across socio-economic groups 'A', 'B', 'C1' and 'C2'. The levels of response to the programme appear lower among group 'D' which may be explained by the fact that this group was less highly educated and therefore possibly are less likely to change in response to a programme like this. However, the results for group 'E', which

consist mainly of retirees and jobseekers, has shown the highest change in mode share in response to the programme.

The years under review were marked by an economic crisis and it is possible that the large reductions in driving among group 'E' may have been driven by economic necessity, as some people who were already on low incomes may have found that they could not afford to drive as much as before. There was evidence from qualitative research in Dungarvan that this had happened to a certain extent. Therefore, there is a risk that the impact of the programme on this group may be overstated, if some of the people changing mode have done so out of economic necessity.

The results also suggest that lower income groups and pensioners, may be open to reducing car use for financial reasons. This group may also be less time sensitive and place a high value on the health benefits of walking when they are brought to their attention, made easier to achieve by a programme like this.

These findings have implications for the design of future programmes, as follows:

- There is a need for greater segmentation of behavioural change measures to different target groups. For example, some groups such as those on low incomes and retirees may be easy to reach and influence with a programme like this.
- External factors can have a large impact on the behaviour of some or all of the population, and can partly obscure the impact of programmes like this;

TABLE 7.1: SUMMARY OF IMPACTS BY GENDER FOR ALL TRIPS

	MALE			FEMALE		
	2012	PP Change	2016	2012	PP Change	2016
	Private Car	69.5%	<u>-5.9</u>	63.6%	72%	<u>-2.4</u>
On Foot	18.6%	<u>+6.4</u>	25%	22%	<u>+2.7</u>	24.7%
Bicycle	3.5%	<u>+1.5</u>	5%	1.2%	+0.3	1.5%

TABLE 7.2: SUMMARY OF IMPACTS BY SOCIO-ECONOMIC GROUP FOR ALL TRIPS

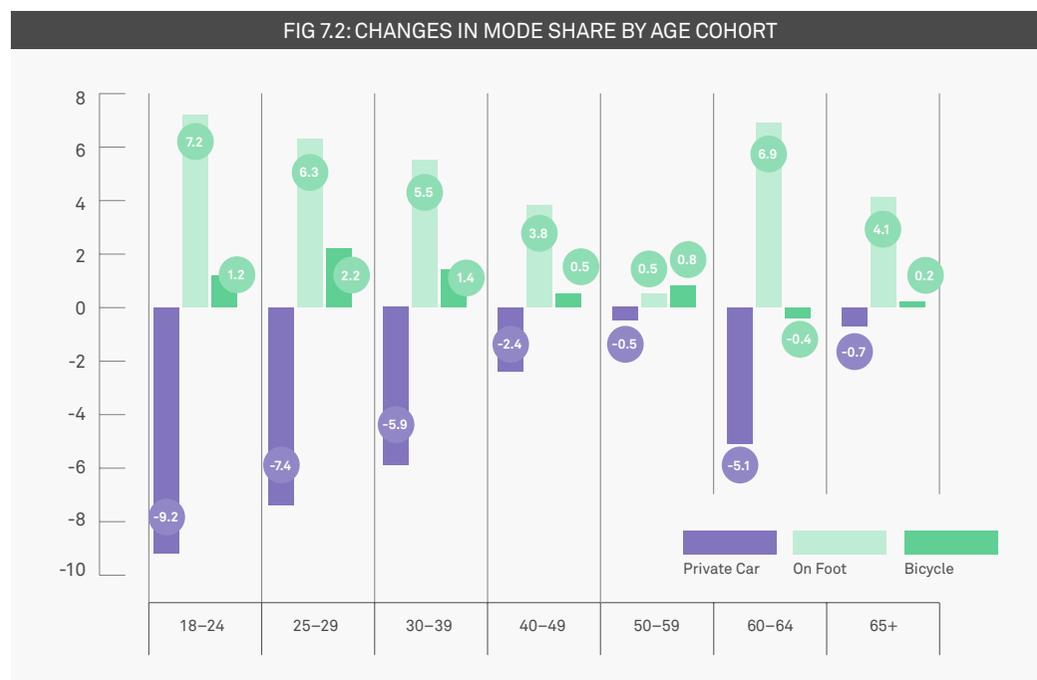
Code	Chief income earner's occupation	Change in Mode Share 2012-2016 (PP)		
		Car	Walk	Cycle
AB	Higher and Intermediate managerial, administrative or professional	<u>-3.4</u>	<u>3.1</u>	0.6
C1	Supervisory or clerical and junior managerial, administrative or professional	<u>-5.4</u>	<u>4.7</u>	<u>1.3</u>
C2	Skilled manual workers	<u>-4.1</u>	<u>3.9</u>	<u>1.1</u>
D	Semi-skilled and unskilled manual workers	-0.4	0.5	<u>1.1</u>
E	Casual or lowest grade workers, pensioners, and others who depend on the welfare state for their income	<u>-12.1</u>	<u>13.1</u>	0.5

7.2.3 Different levels of impact across age groups

The largest shift in car mode share (-9.2pp) to walking (+7.2pp) was amongst 18-24 year olds. This could, in part, be due to their lower incomes and therefore the greater influence of the background economic conditions. However, it could also reflect a cultural difference in the younger generations who may not see the car as the priority mode of travel.

Rates of modal shift were also significant for the age cohorts between 25 and 49 years old, with a tendency for the volume of change to decrease in progressively older cohorts. For example, the 50-59 year old age cohort did not show statistically significant levels of mode share change. However, the 60-64 age cohort

recorded a 5.1pp decrease in private car mode share, as well as 6.9pp increase in walking. The 65+ year old age cohort also recorded a 4pp increase in the mode share for walking. This reinforces the idea that older people, particularly those that are retired, may respond in a significant way to this type of programme. Figure 7.2 below summarises the key results by age cohort.



7.3 Benchmarking

A review of behavioural change programmes which have been implemented internationally was undertaken to compare the outcomes of similar programmes with the scale of change observed within the STAs. A summary of the programmes examined is provided in Table 7.3. However, it should be noted that it was difficult to make direct comparisons between these programmes and the STA programme for a number of reasons, as follows:

- There were differences between programme locations with respect to infrastructure provision and public transport services at the outset of programmes; and
 - The socio-demographic characteristics of the programme areas were different.
- The gross change in walking mode share (+4.4pp) observed in the STAs for all trips was higher than some international comparators, but at the lower end of the towns in the Smarter Choices, Smarter Places programme in Scotland (+5.1 to +21.4pp). The gross level of change in cycling observed (+0.9), from a relatively low baseline in 2012, was low compared with other programmes, although it should be noted that investment such as the Cycle Demonstration towns had a far more focused investment plan. On this basis, the impact of the STA investment sits better within the international context for walking than for cycling, given the caveats established above.
- There were a limited number of programmes which combine both infrastructure and behavioural change measures and which have been evaluated in a detailed manner similar to the STA programme;
 - The approach to measuring 'change' varied significantly between programmes both in terms of how change was captured (household travel surveys, school and workplace travel surveys, cycle counts etc.) as well as the quality of data and how results have been reported. The STA evaluation involved travel diaries rather than more generalised responses, and interviewers visited each household to complete the travel diary, which is more accurate and achieved a higher response rate than relying on self-completion of posted diary surveys;

TABLE 7.3: INTERNATIONAL EXAMPLES OF TOWN/CITY WIDE TRAVEL BEHAVIOUR CHANGE PROGRAMMES

Programme	Outputs	Key Outcomes
<p>Cycle Demonstration Towns, UK (Derby, Darlington, Brighton, Lancaster, Aylesbury, Exeter)</p> <p>£18m across 6 towns 2005 - 2009</p>	<ul style="list-style-type: none"> • Infrastructure • Media campaigns • Personalised Travel Planning (PTP) • Cycle repair • Cycle training 	<p>Cycling mode share increases of:</p> <ul style="list-style-type: none"> • +0.4pp for trips to work, to 8.9% (workplace travel surveys) • +0.3pp for trips to school, to 2.2% (school Census)
<p>Sustainable Travel Towns, UK Darlington, Peterborough, Worcester</p> <p>£15.6m 2004 - 2008</p>	<ul style="list-style-type: none"> • Infrastructure focusing on access to schools and workplaces • PTP • Travel awareness campaigns 	<p>Percentage point change in mode share is not available. Based on HTS results*, the following changes in trips per person at the overall programme level were recorded:</p> <ul style="list-style-type: none"> • 9% decrease in car trips per person • 10% to 13% increase in walk trips per person • 26% to 30% increase in cycling trips per person • 10% - 22% increase in bus trips per person <p><i>*HTS incl. travel diary was a self-completed questionnaire received by post, vs doorstep interviews used in STAs</i></p>
<p>Smarter Choices, Smarter Places Programme, Scotland (Barrhead, Dumfries, Dundee, Glasgow East End, Kirkintilloch/Lenzie, Kirkwall and Larbert/ Stenhousemuir)</p> <p>£15m + other unquantifiable partner resources 2009 - 2012</p>	<ul style="list-style-type: none"> • Infrastructure • Services • Travel plans • PTP • Promotion 	<p>No combined results for the programme are available. Statistically significant changes in mode share by town according to HTS* included:</p> <ul style="list-style-type: none"> • increase in walking mode share in 4/6 towns, by between 5.1pp and 21.4pp • increase in cycling in one town (+0.7pp) • decrease in car driver mode share in 4/6 towns by between -7.4pp and -19.4pp • increase in car passenger mode share in 3/6 towns by between 2.7pp and 3.5pp <p><i>*HTS incl. travel diary was self-completed in 2009 and Computer Aided Personal Interviewing in 2012</i></p>
<p>West Sussex Sustainable Travel Towns, England (Horsham and Chichester)</p> <p>£2.46m 2013-2015</p>	<ul style="list-style-type: none"> • Improved cycle and pedestrian access to stations • New cycling routes • Range of behaviour change initiatives 	<p>Between the 2013 and 2015 travel surveys*, the following changes were reported in respondents 'usual' mode of travel:</p> <p>Chichester:</p> <ul style="list-style-type: none"> • Work trips: +2pp increase in walking, but -2pp decrease in cycling and -3pp decrease in bus • Escorted school trips: -2pp change car (alone) mode share, +2pp change in bus and cycling mode shares. -2pp change in walking mode share. <p>Horsham:</p> <ul style="list-style-type: none"> • Work trips: 3pp change in walking mode share, but -2pp decrease in cycling and -3pp decrease in bus • Escorted school Trips: -3pp change each in car (alone) and car (sharing) mode shares, +2pp change each in bus, cycling and walking mode shares <p><i>*Postal travel survey (no travel diary), response rates between 23% and 26%</i></p>
<p>IndiMark/TravelSmart Studies Various Locations worldwide incl. 4 in Australia, Gothenburg (Sweden) and Viernheim (Germany)</p> <p>Usually short, 6 months to 1 year</p> <p>Inputs vary depending on location and size of area</p>	<ul style="list-style-type: none"> • Individualised Marketing (IndiMark) technique for promoting the use of public transport • Cycling and walking involving personalised information packs 	<p>Evaluations were based on Household Travel Surveys before and after the programmes</p> <p>Results achieved included:</p> <ul style="list-style-type: none"> • Increases in walking mode share of between 1pp and 4pp • Increases in cycling mode share of between 1pp and 4pp • Increases in public transport mode share of between 1pp and 2pp • Decreases in car mode share of between -5pp and -7pp
<p>National Cycle City Project, Odense, Denmark</p> <p>DKK 10m (approx. €1.4m) over 4 years</p>	<ul style="list-style-type: none"> • Improvements to pre-existing extensive cycle network • Campaigns to improve the image of cycling and cycling behaviour 	<p>Cycling traffic increased by 20% and cycling mode share increased to 25% by 2002.</p>
<p>Portland Bicycle Plan 2030, Portland, Oregon, USA</p> <p>Approx. €2.5m per annum 2010 - ongoing</p>	<ul style="list-style-type: none"> • Development of an integrated cycle network • Improved bike parking • Behavioural measures 	<p>Interim Outcome: Cycling mode share decreased from 6.3% in 2011 to 5.9% 2013.</p> <p>Programme is scheduled to run until 2030</p>

7.4 Quality of Life

The STA programme was anticipated to influence and contribute to improving the quality of life of residents of the three pilot areas, through improving the local transport network. This was evaluated in terms of the perceived ease of travelling around the STAs and the perceptions of local residents of the quality of local areas and public realm.

Improvements in the positive perception of mobility and safety within the STAs, as outlined in the following sections, are an indication of the removal of potential barriers to mobility, which in turn will have contributed to local residents being able to access a full range of services/facilities. These are important factors in people's overall quality of life.

7.4.1 Ease of Mobility/Accessibility

Transport networks have an important part to play in the ability of people to access services and facilities. The HTS attitudinal survey included questions to ascertain residents' perceptions of the ease of mobility around the STAs; the control attitudinal survey also included such questions. Overall, there was an increase (of between 7pp and 10pp) between 2012 and 2016 in the proportion of STA residents who felt that it was easy or very easy to travel around the STAs (Figure 7.3), whilst there was a decrease of -3pp in the control attitudinal survey sample (AAS Control). There was therefore a net change of between +10pp and +13pp in the STAs.

There were similar results when considering the perceived ease of getting around the STA by foot and bicycle by respondents who made walking and cycling trips (Figure 7.4). The gross change for walking was between +4pp and +10pp and cycling between +8pp and +16pp. There were also increases in the positive perceptions of non-pedestrians and non-cyclists across all of the STAs, although to a lower extent. These results reflected an increase in the perceived mobility among STA residents, which is likely to have been influenced by the STA investment programme.

FIG 7.3: EASE OF GETTING AROUND THE STAS (% OF EASY OR VERY EASY RESPONSES)

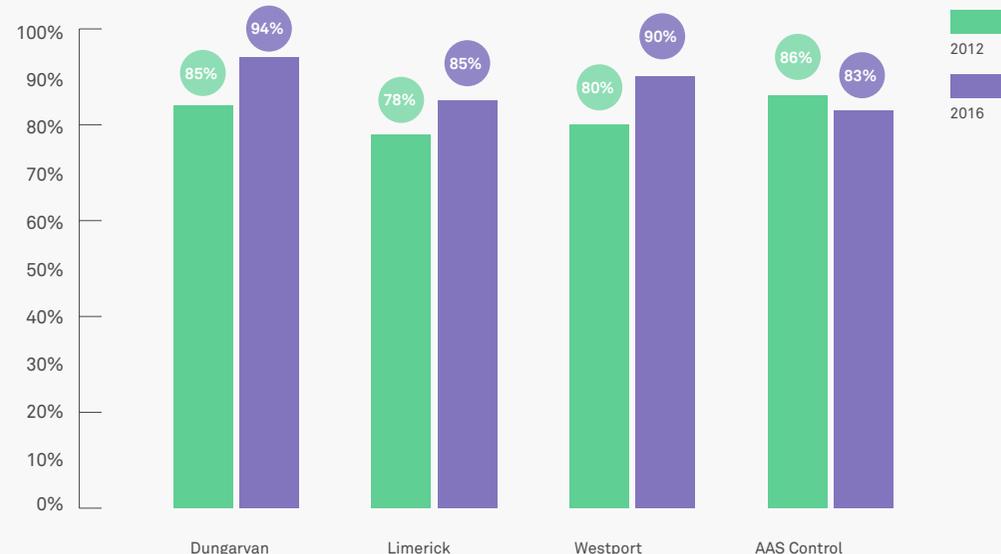
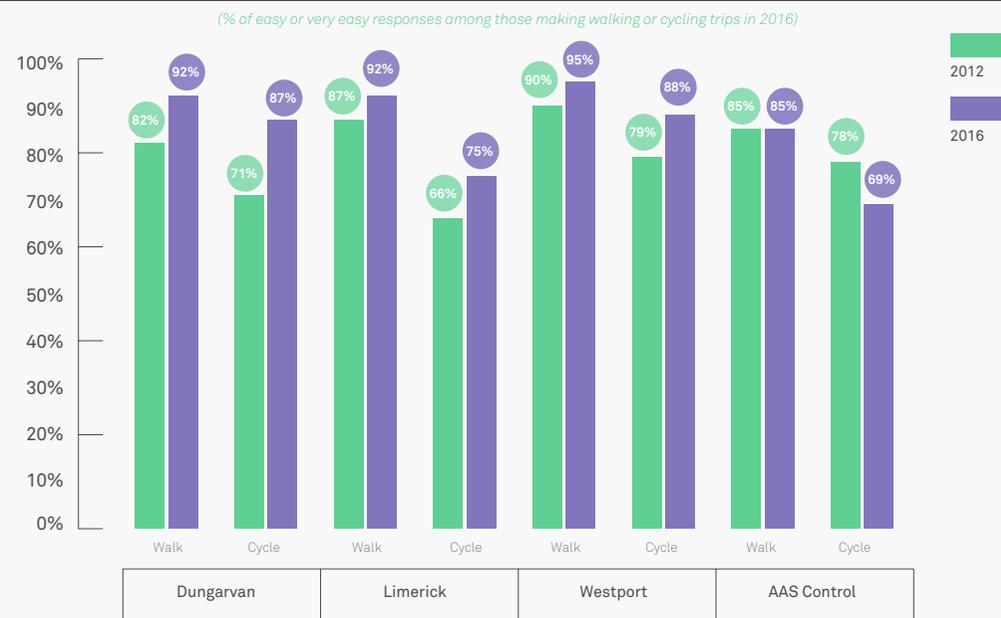


FIG 7.4: EASE OF GETTING AROUND THE STAS BY FOOT/BICYCLE



7.4.2 Perceived Pleasantness

There was also a positive change in the perception of residents in all three STAs of the facilities for cyclists and pedestrians. This included a 23pp increase between 2012 and 2016 in the proportion of residents who cycled in Limerick who felt that cycling was quite pleasant/very pleasant, compared to a 5pp reduction among the control sample. The STA investment targeted at improving facilities for cyclists and pedestrians will have contributed to such changes. However, there were examples of negative feedback on the programme which will also have influenced their overall perception of the area. This included the works in Grattan Square in Dungarvan, where some residents noted concerns about road safety related to the newly installed crossings; the colour of paving was identified as an issue. Furthermore, although more respondents in Westport considered the town to be pleasant compared to the control sample, there was a reduction in the proportion stating this view between 2012 and 2016.

7.4.3 Perceived Safety

A central element of residents' perceptions of the STAs was the level of safety for pedestrians and cyclists. As per the perceived ease of travel, there was an increase between 2012 and 2016 in the proportion of HTS respondents in Limerick (11pp) and Dungarvan (16pp) who agreed their area was safe to 'walk around and get exercise during the day and evening', whilst there was a reduction among respondents in the control sample (-3pp, see Section 7.6 for details). There was also an improvement in perceptions of the level of safety of both walking and cycling from the risk of traffic in Dungarvan and Limerick. In Westport there was little change in the overall proportion of respondents who said it was either 'completely safe' or 'fairly safe' to walk and cycle, but within this, there were significant increases for both modes in the proportion of respondents who said it was 'completely safe' to walk or cycle. These improvements are likely to have contributed to the increased use of sustainable modes, with the associated health and physical activity benefits.



7.5 Health and Physical Activity

The role of transport in improving individuals' health and wellbeing is generally through increasing the frequency and intensity of physical activity undertaken. The Irish guidance on physical activity sets a recommended level of physical activity for adults of at least 30 minutes of moderate activity at least five times a week (or 150 minutes a week).⁴⁸ The HTS provided evidence on the frequency and distance/duration of walking and cycling activity, with associated self-reported levels of mild, moderate and strenuous activity.

7.5.1 Levels of Walking and Cycling

As reported in Section 3, the HTS identified a gross increase in the mode share for walking (+4.4pp) and cycling (+0.9pp) for all trips across the three STAs, as recorded in the one-day travel diary. There was also a notable increase for both modes for non-commuting trips; walking mode share increased by 5.6pp and cycling by 0.7pp.

As outlined in Section 3, to determine what portion of this increase was due to the STA programme the 2012 and 2016 NTS data (Ireland excluding Dublin) has been used. This data showed that the mode share for walking (+0.2pp) and cycling (+0.1pp) were essentially static.

Netting out this marginal increase in national shares, it was assumed that all increases in walking and cycling unaccounted for by the marginal change were due to the STA programme. Consequently, it was judged that the STA resulted in an increase in walking (+4.2pp) and cycling (+0.7pp) by 2016, once national trends are accounted for.

The attitudinal survey element of the HTS also asked respondents whether they were walking or cycling more/less than 12 months ago. This provided an indication of changes in general travel behaviour, although it should be noted

that this was a self-reported metric rather than a direct quantitative measurement. The evidence showed that a higher proportion of respondents in all three STAs stated they were walking and cycling more in 2016, when compared to the control sample (Figure 7.5). Also, a lower proportion of STA respondents stated that they were walking and cycling less than the control sample.

48 The National Guidelines on Physical Activity for Ireland: https://health.gov.ie/wp-content/uploads/2014/03/active_guidelines.pdf

FIG 7.5: PROPORTION OF RESPONDENTS WALKING AND CYCLING MORE/LESS THAN 12 MONTHS AGO (HTS 2016)

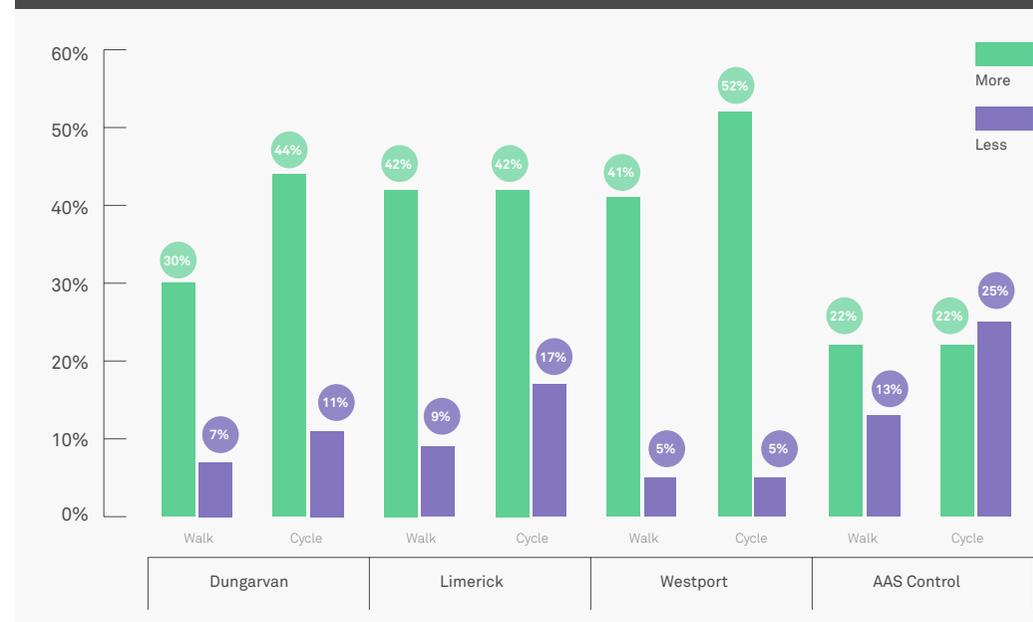
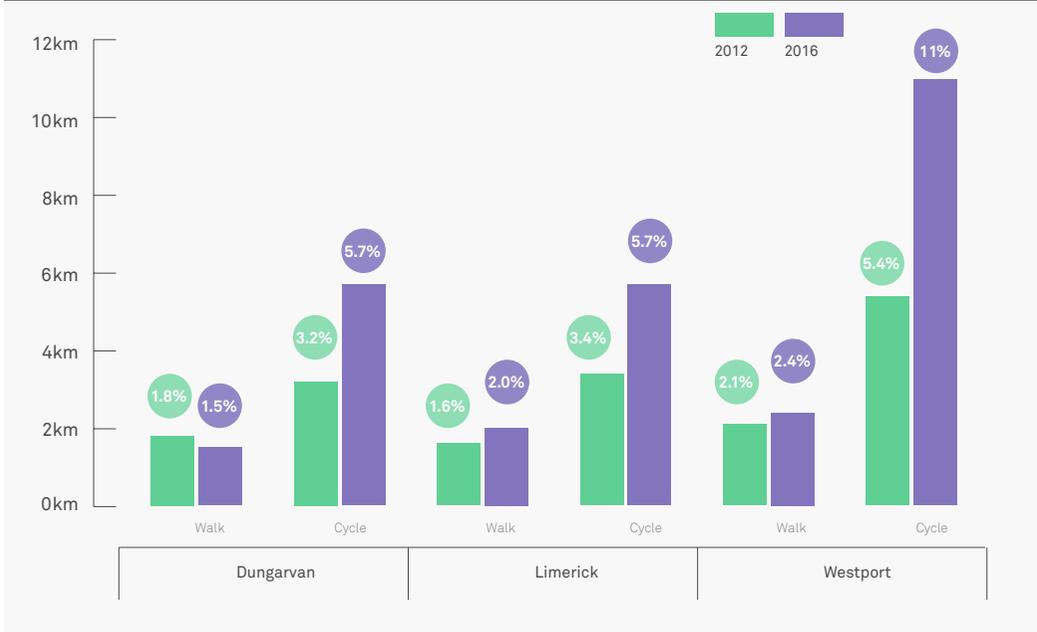


FIG 7.6: AVERAGE DISTANCE (KM) FOR WALKING AND CYCLING TRIPS (HTS)



7.5.2 Levels of Physical Activity

There was also an increase in the average distance of walking and cycling trips between 2012 and 2016, for all three STAs, with the exception of walking trips in Dungarvan (Figure 7.6).

The HTS also recorded the self-reported frequency of physical activity, categorised into mild, moderate and strenuous. There was a significant increase between 2012 and 2016 in the number of days a week respondents exercised in all three STAs, in the majority of categories of activity (Figure 7.8); the only non-significant change was for strenuous exercise in Dungarvan. The largest absolute increase was recorded in Limerick, where the average number of days when mild exercise was undertaken increased from 2.0 in 2012 to 3.1 in 2016. However, the recorded levels of activity in the control sample also increased across all three

Finally, there was a consistent increase between 2012 and 2016 in the reported number of days HTS respondents walked for more than 30 minutes, whilst there was no change in the control sample (Figure 7.7).

FIG 7.7: NUMBER OF DAYS PER WEEK RESPONDENTS WALKED FOR MORE THAN 30 MINUTES

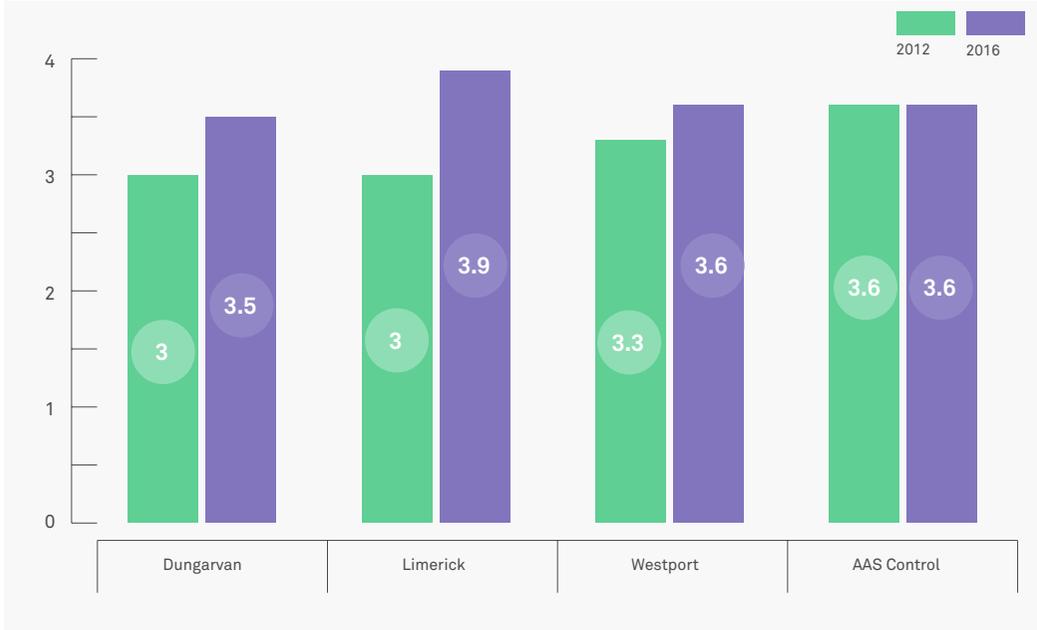
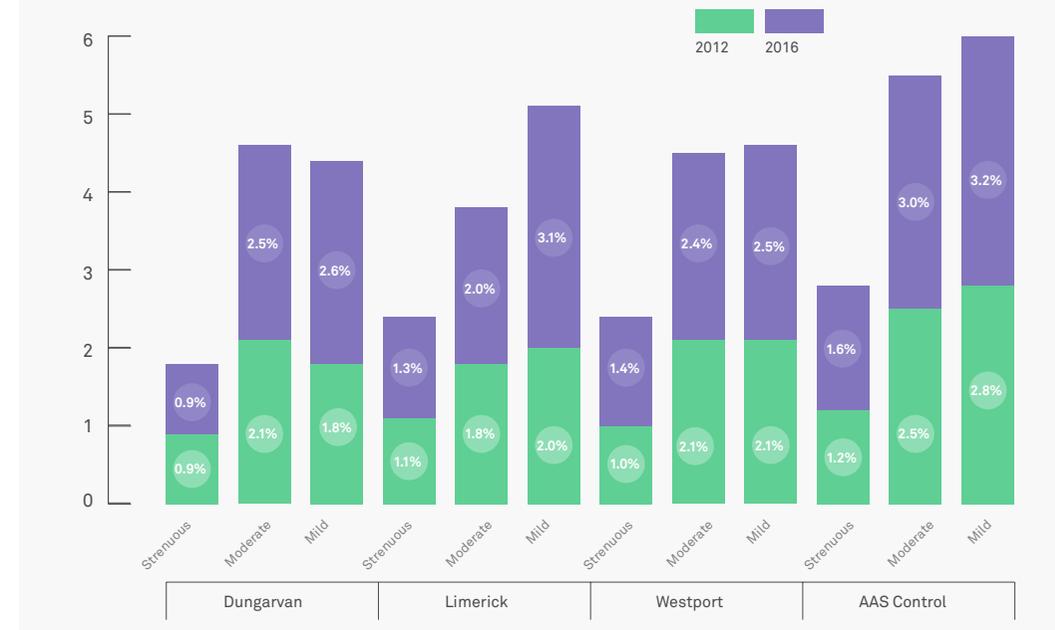


FIG 7.8: NUMBER OF DAYS PER WEEK WHEN EXERCISE WAS UNDERTAKEN (HTS)



7.5.3 Monetised Health Benefits

exercise categories. Indeed, there were only two changes in the STA results (for mild exercise in Dungarvan and mild exercise in Limerick) that were higher than the control sample.

This indicated that STA generated walking and cycling may have replaced other forms of non-transport related physical exercise e.g. going to the gym. However, firm conclusions could not be drawn based upon available data. Interpretation of the question may also have been a factor as the categorisation suffers from ambiguity, as no concept of scale is attached to the descriptions.

The mode share of cycling and walking increased in each of the STAs between 2012 and 2016. In each case, these increases were greater than the increases in mode share observed in “Ireland excluding Dublin” in the corresponding NTS. These national results are a good estimate of the changes in mode share that would have taken place in the STAs in the absence of the programme. The extent to which mode shares for walking and cycling have increased by more than the increases observed in the national survey is therefore a good measure of this impact of the programme in the STAs.

These values were calculated as set out in Table 7.4. Based on changes in mode share measured in the HTS, 17.0% of the walking trips taken in STAs occur as a result of the programme. Similarly, 23.6% of the cycling trips taking place in the STAs occur as a result of the programme investment.

The total number of walking and cycle trips, and the distance travelled on foot and by bicycle, in the STAs was estimated based on the HTS results, grossed up to the total population of the STAs. The percentages attributable to the programme, calculated above, were applied to these estimates of total walking and cycling activity to measure the additional walking and cycling activity as a result of the programme.

The health benefits of this additional activity were then estimated and monetised. This process, described in detail in Appendix B, calculated a benefit value of €1.3m in 2016. It was assumed that these benefits hold constant for the appraisal period.

The quantified health benefits also present monetisable benefits within the workplace in the form of reduced absenteeism. Methods for calculating absenteeism benefits are well established within the CAF. These methods were applied to the additional walking and cycling activity estimated as described above. On this basis it was found that Absentee Benefits nominally amounted to €0.9m in 2016.

The value of these benefits has been incorporated within the Economic Appraisal presented in Section 7.9.

TABLE 7.4: ACTIVE TRAVEL AS A RESULT OF THE PROGRAMME				
Mode Share Active Travel	2012	2016	Increase in mode share (pp)	
Smarter Travel Areas (Combined)				
Walking	20.4%	24.8%	4.4	(1)
Cycling	2.3%	3.1%	0.8	(2)
National (Excl. Dublin)				
Walking	11.3%	11.5%	0.2	(3)
Cycling	0.6%	0.7%	0.1	(4)
Increase in Mode Share due to Programme				
Walking		(1) - (3)	4.2pp	8.6
Cycling		(2) - (4)	0.7pp	1.4
Proportion of 2016 Active Travel Attributable to the Programme				
Walking		17.0%	(4.2/24.8)	
Cycling		23.6%	(0.7/3.1)	

7.6 Safety

Smarter Travel must also result in safer travel in order for initiatives to have any traction and credibility, especially among parents responsible for making decisions on behalf of their children. Road safety is often cited as a barrier to people walking and, particularly, cycling in urban areas. Although the occurrence of road traffic accidents involving vulnerable road users is relatively low compared to motorised modes, the severity of casualties is commonly much worse.

The potential impacts of the STA programme on safety were complex. First, there was specific investment across the STA programme to address road safety related issues, including cycle training, infrastructure measures to provide dedicated road space to cyclists, and improved pedestrian crossing facilities. These interventions were designed to either provide separate road space and facilities for non-motorised modes or enhance the skills and confidence of local residents, thereby contributing to reducing the level of risk exposure. Secondly, a potential consequence of the STA programme increasing the number of people using sustainable modes is the consequential increase in risk/exposure for those using urban roads i.e. there are more vulnerable road users.

The safety outcomes of the STA programme have been assessed on the basis of the perceptions of residents and how safe they feel

using different transport modes. Unfortunately, appropriate road traffic accident data is not available to monetise the impact of safety improvement. When this report was prepared, accident data was only available up to 2014 and therefore no quantitative analysis up to 2016 was possible.

7.6.1 Perceptions of Safety

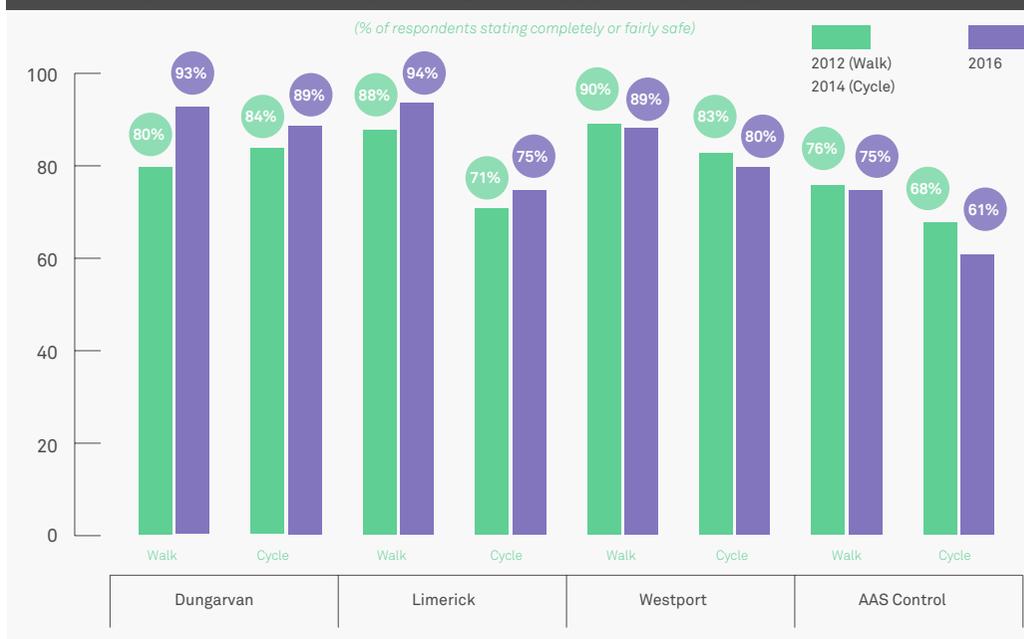
The HTS and associated attitudinal survey provided an insight into changes in the perception of STA residents, as well as areas of ongoing concern. A central element of residents' perceptions of the STAs was the level of safety for pedestrians and cyclists. There was an increase between 2012 and 2016 in the proportion of HTS respondents who felt it was safe to 'walk about and get exercise during the day and evening', whilst there was a reduction among respondents in the control sample. The exception was in Westport, where there was little change in the perception of safety of walking.

There were also improvements in the perceived safety of travelling by foot/bicycle specifically with respect to the risk from traffic in Dungarvan and Limerick, whilst there was a reduction in the control sample (Figure 7.10). In Westport there was a slight reduction in perceived safety of cycling (from 83% in 2014 to 80% in 2016) and

FIG 7.9: PERCEPTIONS THAT AREA IS SAFE TO WALK ABOUT AND TO GET EXERCISE IN DURING THE DAY AND EVENING



FIG 7.10: PERCEPTIONS THAT AREA IS SAFE TO TRAVEL BY FOOT/BICYCLE FROM RISK OF TRAFFIC



there was also a slight reduction in the proportion who felt walking was safe (from 90% in 2012 to 89% in 2016). However, within this, there was a significant increase (19pp) in those who felt it was ‘completely safe’ to walk in Westport, whilst there was a 9pp reduction in the proportion of the control sample that felt it was ‘completely safe’. These improvements are likely to have contributed to the increase in use of sustainable modes, with the associated health and physical activity benefits.

However, in spite of the recent investment in local infrastructure, some parents in all three STAs still believed that walking and cycling to school was not the safest option. Furthermore, the qualitative research undertaken as part of the evaluation found that safety (rather than security) remained a primary concern and a key barrier to consider walking or cycling more frequently. This was especially true for parents of children who could potentially cycle very short distances to school rather than being driven.

A cited concern amongst residents was that some of the cycle lanes are felt to have been introduced on roads that are not wide enough, resulting in a view that many of the lanes were too narrow. The main concern, especially among parents, was that this made the cycle lanes too dangerous to use since there was insufficient segregation between cyclists and other road users, often including heavy traffic on busy roads.

“I won’t allow my daughter on a bicycle because it’s too dangerous. It’s constantly on a main road so there’s no way I would even contemplate her going on a bicycle.”

– *Parents Focus Group, Limerick*

“I cycled to work once but I will never do it again. It was too dangerous, the road was terrible, there were potholes and everything, I was frightened.”

– *Image Focus Group, Westport*

7.7 Environment

The HTS provides evidence relating to the perception of respondents in relation to local air quality and noise from traffic. In terms of local air quality, 88% of respondents in Limerick rated this as good or very good in 2016, slightly lower than in the control sample (90%). The figures for Dungarvan and Westport were 96% and 99% respectively. The change between 2012 and 2016 was largest in Westport at +7.7pp, with smaller increases recorded in Dungarvan (+1.5pp) and Limerick (+3.4pp).

In terms of noise from traffic, 69% of respondents in Limerick rated this as low or very low in 2016, approximately the same as in the control sample (70%). The figures for Dungarvan and Westport were 89% and 80% respectively. The increase in the proportion of respondents who rated traffic noise as low or very low was largest in Dungarvan (+14.8pp), followed by Westport (+13.4pp) and Limerick (+10.6pp).

7.7.1 Monetised Environment Benefits

In addition to the HTS feedback on community perceptions of the environment, it has been possible to monetise the following environmental benefits:

- Vehicle Operating Costs Reductions – Non Fuel:** The reduction in car trips as a result of the programme was calculated using the approach described in Section 7.5.3 for walking and cycle trips. It was found that a reduction in car journeys occurred in the STAs. In absolute terms 465 private car trips were removed in 2016 compared to 2012 levels. Non-Fuel Vehicle Operating Costs avoided of €0.1m per annum in nominal terms were estimated. Total Fuel costs avoided were estimated at €0.2m per annum; and
- Avoided GHG Emissions:** Emissions reductions were calculated for CO₂, NO_x and PM according to CAF guidelines. It was assumed that 28% of all trips were made by Petrol cars, the remaining 78% were made by diesel vehicles.⁴⁹ Emissions reductions were not significant, but were included for completeness. Reductions were estimated at €0.01m nominally in 2016.

The value of these benefits has been incorporated within the Economic Appraisal presented in Section 7.9.

49 New Vehicle Registrations: TEM12, (CSO), 2017

7.8 Economy

Economic activity in the STAs was monitored throughout the evaluation period to identify any effects that the programme might have on local economies. Primary data on economic activity and incomes in the STAs is not available, therefore the monitoring was based on “secondary” measures of economic activity in STAs and comparator towns, including:

- Footfall counts;
- On-street shopper surveys; and
- Business sentiment surveys from the local Chambers of Commerce.

On-street surveys of shoppers showed that the average distance travelled by pedestrians, cyclists and those travelling by car and other modes increased in STAs. Comparator towns on average showed declines in trip distance for pedestrians and motorists. Increases in trip distance for cyclists were observed for cyclists in comparator towns.

The frequency of visits for retail purposes by walking and cycling increased for both STAs and comparator towns. Declines in the frequency of ‘car and other trips’ were noted for both STAs and comparator towns. Average spending per respondent for both STAs and comparator towns were erratic and no conclusions could be drawn from this statistic. Those travelling by car or

other modes did indicate a higher spend than walkers or cyclists.

Business sentiment was captured through surveys of the local Chambers of Commerce, surveys showed mixed results. Responses to surveys were qualitative so it was therefore not possible to aggregate answers. Business sentiment surveys were not returned consistently each year and therefore, the quality of the data is poor. Complete survey data is available for Westport and Castlebar which demonstrated limited change across the period 2012-2016. The most notable difference was a reported influx of investment into Castlebar in 2016. It is unclear if this related to a large single investment or multiple investments. The business sentiment survey for Limerick was very positive. However, no comparator data was available.

In both Dungarvan and Westport there was initial opposition to infrastructure schemes in central retailing areas. In Dungarvan, plans for redevelopment of the Grattan Square received significant negative feedback. The plans were revised to increase the extent of car parking at the request of retailers. While retailers noted reduced footfall while the works were ongoing, feedback on the completed redevelopment has been generally positive to the extent that some retailers have requested additional bike parking within the Square. The experience in Westport, as previously noted in Section 6.4.3, was similar



whereby previously apprehensive retailers on Westport Quay provided very positive feedback on the completed scheme.

Overall, the evaluation did not find evidence that the STA programme had a negative impact on local economies by driving car dependent consumers away, as had been feared by some stakeholders. In fact, feedback from businesses in the STAs suggested that the programme had boosted business in the towns by attracting additional visitors.

7.9 Economic Appraisal

A cost benefit analysis of this pilot programme has been carried out based on the results of this evaluation. This was carried out in line with the standards set in the Department of Public Expenditure and Reform (DPER) Public Spending Code and the DTTAS Common Appraisal Framework (CAF). Full details of the calculation are set out in Appendix B.

The DTTAS allocated €21.2m in total across three STAs under the STA programme. Actual spending including local authority funding and additional investment by DTTAS and other stakeholders as detailed in Sections 4,5 and 6 amounted to €26.47m.

The benefits of the programme that could be valued in money terms, as previously presented, are:

- Health benefits of additional walking and cycling attributable to the programme;
- Reduced absenteeism at work as a result of these health improvements; and,
- Vehicle Operating Costs avoided; and
- Reduction in greenhouse gas emissions as a result of reduced driving.

The overall costs and benefits were forecast over a 20 year economic life, adjusted to 2011 prices and discounted to a present value. The STA Pilot Programme achieved a positive Economic Net Present Value (ENPV) of €7.23m. The calculation of this amount is summarised in Table 7.5.

Despite being a pilot, the programme has delivered monetisable benefits from improved health, reduced absenteeism, avoided vehicle costs and reduced emissions that comfortably exceed its costs. It is important to note that the benefits included in the above calculation are only those that could be accurately quantified and monetised. There was clear evidence of a range of further benefits from the Smarter Travel pilots which were not amenable to quantification and monetising. These included additional tourism in the towns in question and quality of life benefits for the residents of these towns, as described in the sub sections above. Important lessons have been learnt for future programmes of this type, and taking these into account in the future should lead to future programmes of this type delivering higher levels of cost benefit efficiency. For this pilot, the best balance between costs and benefits was observed in Limerick. This arose from the larger population who were in a position to be influenced by the programme and therefore benefit from the investment.

Tourism benefits arising from the construction of amenities such as greenways were not estimated. Physical health benefits attributed to this group would be negligible due to a low frequency of this additional physical activity. Economic benefits arising from such trips can

be an important boost to economic activity in the towns in question. On a national level, these increases will represent displacement of activity and spending that otherwise would have taken place somewhere else, i.e this economic activity will not be “additional” for the economy as a whole.

TABLE 7.5: ECONOMIC NET PRESENT VALUE OF THE PROGRAMME

	Dungarvan €m	Limerick €m	Westport €m	TOTAL
BENEFITS				
Health Benefits	5.83	22.46	3.99	32.27
Absenteeism Reductions	4.10	15.13	2.43	21.67
Avoided Vehicle Operating Costs (Non-Fuel)	1.30	1.67	0.15	3.12
Avoided Vehicle Operating Costs (Fuel)	1.50	1.94	0.17	3.60
Avoided GHG Emissions	0.09	0.12	0.01	0.22
Total	12.81	32.27	6.74	60.87
Discounted	6.33	20.96	3.46	30.84
COSTS				
Nominal Cost (adjusted to 2011 prices)	10.44	10.35	5.79	26.59
Discounted Cost	8.96	8.61	5.16	23.6
NET BENEFIT				
ENPV	-2.64	12.34	-1.70	7.23
BCR	0.71	2.43	0.67	1.31

7.10 Summary

The STA programme contributed to a net reduction in car mode share for all trips of 3.2pp, a net increase of 4.2pp in walking and 0.7pp net increase in cycling. Of note, there was a higher level of behaviour change recorded amongst men than women, and for 18-24 year olds of both genders. The different levels of modal shift observed across groups of the population have important implications for the design of future programmes, in particular highlighting the need to understand the key barriers and motivators that exist for each group.

The change in modal choice observed within the STA programme was relatively low compared with other such programmes implemented in the last decade. The 4.4pp gross increase in walking for all trips across the STAs was higher than some programmes, but low compared to, for example, the Smart Choices, Smarter Places programme in Scotland. Similarly, the 0.8pp gross increase in cycling across the STAs was low compared with other programmes, although the latter commonly included more substantial cycling-focused investment.

The STA programme impacted positively on the quality of life of local residents, including improving perceptions of safety and mobility. The STAs were considered to be more accessible by non-motorised modes, more pleasant to walk and cycle in and, importantly, safer. This indicated that key barriers to the use of sustainable transport modes, such as safety, had in part been overcome by the STA programme.

The reported changes in resident's attitudes and perceptions of their local environment will have contributed to the increased levels of walking and cycling. This in turn will have generated health benefits through the increased levels of physical activity being undertaken; a higher proportion of STA residents than the control sample stated they were walking and cycling more in 2016. Furthermore, a lower proportion of the STA residents stated they were walking and cycling less in 2016, than the control sample. The health benefits were also enhanced by the increases in average walking and cycling distances recorded in each of the three STAs between 2012 and 2016. However, there was also evidence that the increases in walking and cycling, and self-reported levels of physical activity, could have replaced other forms of exercise such as going to the gym. Overall, the reported additional physical activity across the STAs was calculated as a benefit of €1.4m nominally in 2016.

Despite reported improvements in the perception of road safety it remained a commonly cited barrier for some STA residents. A range of measures were implemented across the STAs to improve safety including cycle lanes, cycle training and pedestrian crossings. However, concerns remain amongst parents regarding the safety of their children cycling to school and amongst the wider population regarding the continuity and routing of some cycle lanes. Due to the availability of accident statistics and the need for at least three years of ex-post data, it was not possible to determine

any robust evidence of changes in the number or severity of accidents in the STAs.

The observed shift from car to more sustainable modes within the STA programme will have contributed to environmental benefits in the areas. Although the number of car-based commuter journeys remained relatively constant between 2012 and 2016, there was a reduction in car use for other trip purposes. Over 90% of HTS respondents in all three STAs rated air quality in their areas as good or very good in 2016, with Westport recording a 7.6pp increase since 2012.

A potentially negative impact of the STAs identified during the planning stage was a reduction in economic activity resulting from the anticipated modal shift. However, evidence from footfall surveys, on-street surveys and interviews with local businesses identified that there was little or no negative impact on the local economies.

When considering the range of monetisable costs and benefits (e.g. absenteeism, vehicle operating costs and emissions) of the STA programme a Benefit/Cost Ratio of 1.31 was calculated.



8



**Lessons for
the future**

Lessons for the Future

The primary lesson learned from the STA Pilot Programme is that the programme has had a positive impact on the participating communities. The programme has resulted in a gross change in car mode share of -4.0pp in the STAs, greater than the -0.8pp reduction achieved in the control area during the same period of 2012-2016. The programme has also had a positive impact on quality of life, health, safety, the local environment and economy. The monetisable benefits of the programme demonstrate an overall cost benefit ratio of 1.31.

Delivery of similar programmes elsewhere should present similar benefits; it is highly likely that other programmes could achieve a more positive impact, assuming that the lessons learnt from this pilot programme are taken into account.

A number of common themes emerged during evaluation of the STA programme that provide valuable lessons learned for local authorities working to deliver similar programmes and objectives. These themes are set out below in addition to concluding recommendations for policy makers.

An integrated package of both infrastructure and behavioural change measures is most likely to achieve modal shift

Each of the three programmes delivered were composed of both infrastructure and behavioural change measures. The evidence suggests that this is a reasonable approach to take in other areas, especially on the basis of the need to address existing low levels of infrastructure provision, particularly for cyclists and the positive impact and cost effectiveness of behavioural change measures.

The positive impact of an integrated investment solution has clearly been demonstrated at the University of Limerick where infrastructure improvements were supported by a focused behavioural change campaign, albeit within a captive market. Improved infrastructure for walking and cycling was accompanied by increased parking constraints (sticks) and various behavioural change measures (carrots) targeted at students and staff. The visibility of the Smarter Travel campaign and timing of the infrastructure delivered resulted in high levels of modal shift being achieved by the campus.

A key observation of the STA programme is that none of the areas successfully implemented both 'carrot and stick' measures, which are generally both needed to provide the impetus

and incentive to change travel behaviour. For example, in both Dungarvan and Westport (and some parts of Limerick) there are no car parking charges within workplaces and significant parts of the town centres. Therefore, there is no fiscal 'stick' to provide an impetus to change travel behaviour. Likewise, the delay caused by congestion, especially in Dungarvan, is limited and therefore driving is still perceived as the most convenient option for many. Restraining car access is another example of a 'stick', however, despite commitments made in the Smarter Travel bids, none of the STAs implemented measures that could be perceived as inconveniencing car drivers. Unless 'sticks' are implemented, the potential impact of 'carrots' (for example, events and challenges etc.) may be limited to a specific group of people that already demonstrate a willingness to change.

Monitoring and evaluation of the impact of the STA Pilot Programme was integrated within delivery from the early stages of programme planning. A clear framework for the evaluation was established including a detailed and regular programme of monitoring and reporting. This has resulted in a clear appreciation of the programme impacts and should contribute to better value for money from future similar programmes/ schemes. In this regard, it is recommended that regular monitoring and evaluation becomes a key component of delivery of such programmes.

Naturally, the scale of impact will always be dependent on the quality of both the infrastructure and behavioural change measures delivered, these themes have been addressed separately through subsequent themes below.

Recommendations

- A well-integrated and scheduled package of both infrastructure and behavioural change measures is most likely to impact modal shift.
- Ideally, programmes should incorporate both 'carrot and stick' measures.
- Programmes should focus on specific geographic areas with a clear vision and objectives.
- Programme and project delivery needs to be supported by a robust monitoring framework to enable policy makers to understand the impact of investment and lessons learned.

Poor perception of safety is the biggest barrier to increasing cycling

Safety concerns were a consistent theme throughout this evaluation to the extent that it is considered the most significant barrier to increasing cycling. The dominant issue in this respect is the perceived lack of dedicated space for cyclists. In most circumstances, this relates to the lack of segregation between motorists and vulnerable road users although there are situations where shared space intended for cyclists and pedestrians also presents safety concerns.

Reservations regarding safety are more pronounced for journeys on routes where no facilities are provided. In these situations, resistance to cycling is heightened by the prospect of being in close proximity to vehicles on busy roads or on narrow roads in more rural areas. Naturally, safety concerns are heightened further in relation to children being encouraged to cycle.

The poor perception of cycling safety is linked to low levels of cycling confidence among adults with limited experience of cycling on-road and who are therefore more likely to draw the conclusion that cycling is unsafe. Community cycling audits undertaken by AECOM demonstrate that even basic tuition gives adults the confidence needed to cycle on-road. There was low take-up on adult cycle training, provided in the STAs as part of the programme, but cycle training delivered within schools has been very well received by teachers, parents and students and has resulted in increased cycling among children, despite the safety concerns held by parents.

The perception of cycling safety varies significantly depending on the infrastructure provided with segregated infrastructure offering the highest perceived level of safety, as outlined in the next theme. However, on the basis that completely segregated infrastructure cannot reasonably be provided across a full urban network, it is recommended that the provision of cycle training is expanded in schools and workplaces.

Recommendations

- Prioritise investment in a higher standard of segregated cycling infrastructure, where possible, which is more likely to offer a higher perception of cycling safety and therefore encourage modal shift.
- Ensure cycle networks are integrated and provide a consistent level of infrastructure and junction treatment to improve actual and perceived safety.
- Incorporate cycle training within primary school curriculums to encourage safe cycling and confidence from a young age.
- Incorporate cycle training within workplace travel plan programmes to encourage an increase in cycling confidence and cycling among adults.

Greenways have had a very positive impact on the STAs but have not encouraged modal shift for commuting trips

Feedback on greenways delivered across all STAs has been overwhelmingly positive. The facilities have demonstrated a range of benefits through this evaluation including quality of life, community and social benefits, environmental and economic benefits, including tourism benefits. The greenways have been well received on the basis of the high level of safety they offer pedestrians and cyclists in a traffic free environment.

The greenways have been successful in encouraging an increase in leisure walking and cycling but have not yet been successful in achieving their overarching aim; encouraging modal shift for commuting trips. Across each of the STAs, the highest travel demand on the greenways was during the weekend and during the week the peak volume of both cyclists and pedestrians was either at midday or in the evening after the main commuting period. There are a number of reasons why this may have materialised in the STAs and could be mitigated in other areas as outlined below.

Recommendations

- The overarching objective for scheme delivery, be it to encourage commuting or leisure, or both, needs to be embedded within overall scheme planning and design from the early stages of delivery. It is easier to construct greenways along pre-existing facilities such as railway corridors, however, if this route does not reflect commuting desire lines then the facility is unlikely to have an impact on commuting trips. Therefore, while opportunistic, the limitations of utilising pre-existing infrastructure needs to be acknowledged. This point is especially relevant to Westport where the mostly orbital greenways do not reflect the majority of commuting patterns and therefore they have had limited impact on commuting patterns.
- To maximise the catchment area and encourage modal shift for commuting trips, frequent access points off the facility need to be provided to residential areas and trip generators. The experience from Dungarvan suggests this isn't easy once the infrastructure is in place and therefore it is imperative that frequent access points are integrated within scheme design from the outset of planning, design and local engagement.

On-road cycling infrastructure does not encourage modal shift

- Pre and post-delivery of greenways, it is imperative that they are promoted to encourage association with the specific trip types for which they are intended. During qualitative research many participants, especially in Dungarvan and Westport, were under the impression that the greenways had been developed for tourism/leisure purposes and therefore associated them with these trip types. If investment in greenways is intended to encourage active commuting then they need to be clearly promoted in this regard within the community.
- On the basis of the high level of perceived safety offered on greenways, they tend to attract less experienced cyclists who are uncomfortable cycling on-road. On this basis, it is important that access routes to greenways and junctions along the facilities also offer a high level of safety and amenity. This feedback is relevant to all STAs with research participants saying they felt unsafe on routes accessing the greenways and therefore felt compelled to drive to the facility.
- Reasonably gentle gradients are imperative for greenway delivery where possible. Feedback from research participants in Westport emphasised that the gradient on some sections of the town greenways were too steep and therefore not conducive to regular commuting.
- Greenways that offer some natural surveillance are likely to be more appealing to commuters. Feedback received from some research participants in Limerick felt that the remote location of the greenway along the Shannon Banks presents security concerns, especially in winter. The Dungarvan greenways offer an advantage in this regard as, for the most part, the route can be seen from the main access routes into the town.

On-road cycling infrastructure (such as cycle lanes) delivered across the STAs has not demonstrated any impact on modal shift. Automatic traffic counters close to these facilities do not demonstrate positive change over the evaluation period. Qualitative feedback regarding on-road cycling has also been negative with some research participants suggesting that investment in on-road cycling facilities is 'counter intuitive' to increasing cycling unless they are delivered to a reasonably high standard. The key issues raised within the STAs included:

- Facilities too narrow and not linked;
- No extended provision for cyclists through junctions;
- Facilities are encroached by traffic;
- Poor driver behaviour; and
- Routes are not well maintained after delivery.

Overall, feedback from the experience in STAs suggests that investment in on-road cycling infrastructure does not improve perceptions of safety and therefore has not contributed to modal shift.

Recommendations

- Segregated cycling infrastructure needs to be prioritised where possible.
- Where on-road facilities are delivered, they need to be wide and offer a safe distance from traffic, be linked to other facilities and through junctions.
- Raise awareness of appropriate behaviour where roads are shared between drivers and cyclists.
- Ensure delivery of all facilities is accompanied by appropriate maintenance strategies.

Walking has increased more than cycling in response to investment

The STA objectives all included modal shift targets to increase both walking and cycling. However, throughout delivery there has been a bias on delivery of both infrastructure and behavioural change measures targeting cycling rather than walking. Despite this, in all areas walking has experienced the highest level of shift, as outlined in Table 8.1. Walking increased from 20.4% mode share at a programme level in 2012 to 24.8% in 2016 for 'all trips' as opposed to a 0.8% increase in cycling to 3.1% in 2016.

This experience suggests that more focused investment on increasing walking for short trips may be a more achievable quick-win in reducing car dependency. Measures could be delivered in parallel to investment in appropriate infrastructure and behavioural change measures to encourage cycling, which may be a longer term objective. To lead the way in this regard, it is recommended that a National Walking Policy is developed, similar to the Cycling Policy.

Recommendations

- Ensure delivery programmes recognise and invest in the potential for increased walking in parallel to measures targeting an increase in cycling.
- Deliver a National Walking Policy.
- Encourage local authorities to identify and deliver quick-win safety and urban realm measures that improve the permeability and attractiveness of walking.

Behavioural change measures have a positive impact but need to be delivered in a more focused way

Behavioural change measures formed a key component of each STA programme and there is evidence that they have had a positive and cost effective impact on the identified change, especially within schools, workplaces and campuses.

Despite positive feedback on aspects of the behavioural change measures, there is evidence from all STAs that this element of the programme sometimes lacked the focus and experience needed to maximise impact. For example, initial bids from all three areas outlined commitments to deliver personalised travel planning (PTP) and workplace travel planning projects, but

with the exception of workplace travel planning in Limerick and Operation Transportation in Westport, these commitments were not delivered upon, in part as there was insufficient experience or resources to deliver them.

The potential for some elements of the behavioural change programmes delivered in the STAs to influence change is also questioned. For example, in all areas funding was invested in the design and dissemination of extensive marketing collateral. In Dungarvan, thousands of Smarter Travel newsletters were distributed and in Limerick, an extensive package of marketing collateral was developed and

TABLE 8.1: COMPARISON OF PROGRAMME IMPACTS ON WALKING AND CYCLING 2012-2016

	STA Programme Level		Dungarvan		Limerick		Westport		NTS Control (excl. Dublin)	
	2016	% Change	2016	% Change	2016	% Change	2016	% Change	2016	% Change
	On Foot	24.8%	4.4	20.3%	5.6	26.1%	4.1	27.4%	3.1	11.5%
Bicycle	3.1%	0.8	3.6%	0.9	3.4%	0.9	2.3%	0.9	0.7%	0.1

distributed. However, there is no evidence that these measures have influenced modal choice. The evidence suggests that measures which involve more direct engagement are likely to have a greater impact on behavioural change (for example, school and workplace travel planning, events and ‘challenges’).

None of the STAs developed a segmented approach to delivering behavioural change measures. The funding was invested across the community equally without recognition of the willingness or ability of various sectors within it to change. This resulted in some research participants concluding that Smarter Travel was sometimes ‘preaching to the converted’ instead of focusing on other cohorts of the community that might demonstrate a willingness to change but haven’t engaged with the programme. This evidence points to the need for greater training and guidance for those delivering behavioural change programmes.

Recommendations

- Integrate behavioural change measures within transportation programmes, especially in areas experiencing congestion/access issues.
- Disseminate training and guidelines for local authority staff designing and delivering behavioural change measures.
- Encourage more focused investment of behavioural change funding through a segmentation strategy that is based on a clear understanding of willingness to change within the community.
- Establish a forum which allows travel behaviour change specialists to share ideas and feedback about what has worked or otherwise in their area.

Greater modal shift for school trips requires a cross government response

Across all STAs the feedback received on behavioural change interventions delivered in schools has been overwhelmingly positive, particularly with regard to cycle training and challenges. There is evidence that this programme improves awareness and confidence among participating students and that it has influenced the mindset of parents who, despite safety concerns, have increased leisure walking and cycling at least.

Success of the School Travel Programme would be enhanced by more cross-Government support in a number of areas as follows:

- Heavy school bags/ equipment and school uniforms which make cycling difficult were consistently raised by parents as a barrier to Smarter Travel for the school trip. The Dungarvan programme aimed to address this by delivering an e-tablet pilot programme in a number of schools. While feedback on the pilot was reasonably good in terms of travel impact, the pilot was limited in its impact as books are needed for a significant part of the curriculum and many are brought to and from school daily. To increase the use of e-tablets, teachers require more support from the Department of Education in terms of the content of the curriculum. While decisions regarding school uniforms may be made at the local level, additional guidance from the Department of Education in this regard would be helpful.

- Travel distances to school, especially in Limerick, are long with many families choosing to travel across the city to access schools with a perceived better level of facilities. Most of these trips make Smarter Travel trips to school more difficult and increase dependency on private car trips. Although the scope to address this issue is difficult, it needs to be recognised as a key barrier to Smarter Travel.
- In some instances, as experienced within Limerick and Westport, new schools have been developed or relocated to areas which are no longer conveniently accessible on foot or by bike. Planning decisions have naturally had an impact in this regard and a cross sector approach is needed to limit the impact on travel patterns.
- On the basis of the positive health impacts of the School Travel Programme in most STAs, there may be benefit in the Department of Health supporting the programme to tackle childhood obesity issues currently faced in Ireland.

Recommendations

- Continue to support and expand behavioural change measures within primary and possibly secondary schools.
- Develop a cross government approach to tackling issues associated with car dependency for the school trip.

Programme and project management has an impact on programme outcomes

While this evaluation was commissioned to focus specifically on programme outcomes and impact, a number of important observations were made which provide important lessons learnt for future management of similar programmes, as follows:

- None of the STAs factored legacy into their Smarter Travel bids with the result that in some areas, such as Dungarvan, there is limited legacy of the programme remaining since the team was dissolved at the end of 2015. Naturally the infrastructure is a key legacy but Smarter Travel as a brand and concept is no longer promoted. In Limerick and Westport, resources are still dedicated to Smarter Travel (albeit very limited in Westport). It is recommended that future similar programmes are encouraged to integrate legacy to ensure a lasting and visible impact within the community.
- Changes within delivery teams across all STAs have reduced the potential of some programmes to influence change. For example, once the Smarter Travel team in Dungarvan was dissolved strong relationships which the team had developed with key stakeholders in the community were lost, including schools and businesses. Similarly, in Limerick, the lack of clarity regarding project governance at the outset resulted in lost time, potentially impacting programme delivery. This demonstrates the importance of committing experienced resources to delivery of Smarter Travel programmes.
- Although the Smarter Travel bids were submitted in 2010, a decision on funding was not made until 2012 at which point there was a change in some of the proposed delivery teams and the context for some proposed schemes had changed. The delay in funding announcement impacted programme delivery and should be avoided in future where possible.
- Committed schemes which were perceived as inconveniencing drivers were not delivered by three STAs. There is a need to ensure stronger support at a local level for proposed schemes prior to bidding which also requires careful monitoring at a programme level if proposed objectives are to be achieved.
- There is evidence that some local authorities were under pressure from within their own organisations to divert planned spend to other internal projects. On this basis, it is important that local authority teams have strong support at a management level and that there is ongoing management of funding and scope at a programme level.
- In some instances, innovative measures were not well scoped out and did not result in any output/ impact therefore presented poor value for money. While it is within the scope of a pilot programme to explore alternative solutions, it is essential that there is a clear understanding of the potential outcomes prior to investment to ensure better value for money.

9



Concluding
Summary

Concluding Summary

To conclude on the impact of Smarter Travel investment in Dungarvan, Limerick and Westport from 2012 – 2016, a summary of evidence relating to each of the key evaluation questions for the programme is provided below.

To what extent have the anticipated objectives of the programme been achieved?

The DTTAS objectives for the Smarter Travel programme were *‘to transform the respective areas of Limerick City & Environs, Dungarvan and Westport into Smarter Travel Areas, promoting, among other measures, cycling and walking, the use of public transport⁵⁰ and reducing car travel. The Areas will transform not just people’s travel patterns, but their lifestyles, their communities and their localities’.*

The impact of delivery on the two key programme objectives is summarised as follows:

- Transform areas through modal shift:** Delivery of the Smarter Travel programme has resulted in a gross change in car mode share of -4.0pp in the STAs, greater than the -0.8pp reduction in the control area. The decrease in car mode share was accompanied by an increased in walking (+4.4pp) and cycling (+0.8pp) mode share. On this basis, although the level of change is reasonably small, the programme has achieved its overarching objective of modal shift; and
- Improve quality of life:** Quality of life within in the STAs has improved, mainly as a result of the improved amenity presented by infrastructure investment. This impact has been measured using outputs from the HTS in relation to the perceived ease of getting around and perceptions of pleasantness and safety of the transport network, especially for pedestrians and cyclists. For each criterion, there was positive change across each STA over and beyond that experienced within the control area. Using the relevant data available, the programme has achieved this objective.

⁵⁰ It should be noted that very few measures were delivered to target an increase in public transport and therefore the impact of the programme in this regard has not been measured.



How does the level of change in mode share in STAs compare to the control during the same period?

The HTS recorded a gross reduction of 4.0 percentage points (PP) in car mode share for all trips between 2012 and 2016, across the STA programme. The level of recorded change (shown in Table 9.1) varied from -7.4pp in Dungarvan to -1.8 in Westport. The National Travel Survey recorded a national change of -0.8pp, demonstrating a net change of -3.2pp at the STA programme level. The combined increase in walking and cycling mode share for trips to work and other work/business trips, was 4.4pp at the STA programme level, compared to -0.4pp among the control (NTS incl. Dublin) sample.⁵¹

What are the main barriers to achieving the objectives? How (if at all) have these been overcome?

The evaluation of the STAs has identified six main barriers to increasing the use of sustainable transport modes, with evidence on how these were addressed during the programme:

- **Safety:** Safety was consistently identified by STA residents to be the main perceived barrier to walking and cycling, with cycling in particular viewed as unsafe. The dominant issue in this respect was the perceived lack of dedicated space for cyclists (predominantly relating to separation from motorists, but also in some situations from pedestrians). This remains a barrier to cycling in each STA even after completion of the STA infrastructure programmes.

- **Low levels of cycling confidence:** There is evidence that cycling confidence is relatively low amongst adults in the STAs. This impacts perceptions of safety and appears to be partially linked to the fact that some adults have had limited experience or training in cycling on-road. Increased provision of adult cycle training is likely to have a positive impact on safety perceptions however, on the basis that the take-up of adult cycling is poor, it may be more appropriate in the longer term to provide cycle training within primary and possibly, secondary schools.

- **Attitude to car use:** Driving is perceived as a necessity within the STAs, mainly due to a lack of reasonable public transport options. Once a car is purchased it is perceived that it must be used for as many journeys as possible in order to get 'value for money'. This perception of the car as a default option for all journeys is supported by the view that the STAs are still viewed as 'car-friendly'. This is exacerbated by the fact that there are no major 'sticks' delivered to discourage driving – congestion is limited (with the exception of Limerick) and there is plentiful free parking at workplaces and other key destinations.

TABLE 9.1: COMPARISON OF HTS AND NTS ALL TRIP MODAL SHIFT FROM 2012 TO 2016

	STA Programme Level		Dungarvan		Limerick		Westport		NTS Control (excl. Dublin)	
	2016	% Change	2016	% Change	2016	% Change	2016	% Change	2016	% Change
Private Car	66.8%	<u>-4.0</u>	72%	<u>-7.4</u>	64%	<u>-2.7</u>	66%	-1.8	81.3%	-0.8
On Foot	24.8%	<u>4.4</u>	20.3%	<u>5.6</u>	26.1%	<u>4.1</u>	27.4%	<u>3.1</u>	11.5%	0.2
Bicycle	3.1%	<u>0.8</u>	3.6%	<u>0.9</u>	3.4%	<u>0.9</u>	2.3%	<u>0.9</u>	0.7%	0.1
Public Transport	2.9%	-0.1	2%	0.8	4.4%	-0.6	1.4%	0.0	2%	-0.4
Taxi	0.8%	-0.2	0.6%	0.3	1%	-0.5	0.7%	-0.3	0.5%	-0.1
Other	1.6%	-0.9	1.5%	-0.2	1.1%	-1.1	2.2%	-2.0	4%	1.0

⁵¹ Note that the NTS journey purpose of 'work' includes both commuter and business travel and therefore these two journey purposes within the HTS were combined only for the purpose of comparison with the NTS. Elsewhere in this report, references to the journey purpose of 'commuting to work' refers to travel to work only and does not include business travel.

What types of urban area were the Smarter Travel measures most effective?

- **Inertia:** The additional time and effort associated with walking and cycling (as opposed to driving) acts as a major barrier, with cycling felt to require too much effort and walking expected to take too long. While it is accepted that a certain cohort of the community are unlikely to change their travel patterns, continuous improvements in infrastructure and supporting behavioural change measures may address this barrier.
- **Practical barriers:** Many practical barriers were raised within the STAs during engagement but the most common were as follows:
 - **Trip chaining**, where multiple stops are made on a trip the car is perceived as the most convenient mode of travel (despite short distances in many instances);
 - **Requirement to carry heavy bags and other items makes walking or cycling impractical.** In particular, the weight of children's school bags and the need to carry additional equipment for sports was raised by parents as a major practical barrier; and
 - **Some of the infrastructure** delivered to encourage walking and cycling does not follow a direct route, causing inconvenience.
- **Weather:** The Irish weather also emerged as a consistent theme throughout this research. While in some cases the weather is used as an excuse not to walk and cycle, there is evidence that it acts as a genuine deterrent. There is evidence that behavioural change measures can help overcome negative perceptions of the weather. For example, Westport Operation Transportation participants reported that their presumptions about the weather and active travel were not as negative as initially anticipated. It is recommended that the messaging incorporated within delivery of behavioural change measures addresses weather as a barrier and gives appropriate support to address it.

There is positive evidence of change in behaviour and attitudes in each of the participating STAs regardless of size. Unfortunately, the towns selected for the pilot programme do not provide a broad range to differentiate between settlement size as both Dungarvan and Westport have relatively small populations of 9,227 and 6,198 respectively (2016 Census) compared to 94,000 in Limerick City. Nevertheless, some conclusions can be drawn on the effectiveness of smarter travel investment depending on urban size.

Infrastructure investment will present greater benefit in areas of medium/high population density where it is likely to influence a higher number of trips. However, as demonstrated in Dungarvan and Westport, the economic benefits of investment can be bolstered where infrastructure generates additional tourism.

Delivery of behavioural change measures is resource intensive and requires more investment with increasing population density to retain a personalised impact. Although there was limited investment in behavioural change in both Dungarvan and Westport, compared to Limerick, there is still evidence of positive impact albeit within a relatively small target population.

Concentrating future similar programmes in urban areas of medium/high population is likely to present greater benefit, especially where there are existing congestion issues, where workplace parking charges are in place and where a reasonable alternative to the private car is available.

What measures have been most successful in achieving the programme objectives?

It is difficult to attribute modal shift to any specific measure, the recorded change is a response to the package of measures which have been delivered.

Investment in infrastructure has resulted in improved perceptions of the environment for walking and cycling and there are indications through both the HTS and qualitative research that improvements in infrastructure have influenced increased walking and cycling. Some of the most successful infrastructure measures are as follows:

- Fully segregated off-road walking and cycling infrastructure, as delivered in each STA and a key factor in influencing modal shift particularly for non-commuting trips; and
- Traffic calming and urban realm schemes, such as those delivered in Grattan Square, Dungarvan and Westport Quays, have generally been well received and are perceived to have improved safety and amenity for pedestrians and cyclists.

Behavioural change measures have had a cost effective and positive impact on the identified change. Some of the most successful behavioural change measures are as follows:

- Engagement with schools delivered within all of the STAs;
- Cycle training among students, especially in primary schools;
- Engagement with workplaces and campuses delivered in Limerick;
- Team challenges to encourage travel behaviour change, such as Westport Operation Transportation.

Which measures are transferrable to other communities?

Each of the measures delivered by the STAs could be transferrable to other areas. Naturally, the scale of impact will vary depending on the receiving environment. For example, where a reasonable level of cycling infrastructure is already provided it is recommended that behavioural change measures are implemented such as cycle training and active travel campaigns. However, in areas where infrastructure is deficient and badly perceived by the community, making improvements in this area should be a first priority with behavioural change measures delivered in parallel. Communities developing similar approaches should focus on the 'Lessons for the Future' as outlined in Section 8.

Which target groups were most responsive (in terms of behaviour change) to the measures implemented?

The socio-demographic assessment undertaken has identified a number of trends, as follows:

- **Gender:** Men were most responsive to the measures delivered within STAs. In 2012, car mode share was already higher among women (72%) than men (69.5%). Since delivery of the programme, the gap in car mode share between women (69.6%) and men (63.6%) has increased. Between 2012 and 2016, men were more likely to increase walking (+6.4pp) than women (+2.7pp), while men were also more likely to increase cycling (+1.5pp) compared to women (+0.3%).
- **Age:** The largest shift in car mode share (-9.2pp) to walking (+7.2pp) was amongst 18-24 year olds. Rates of modal shift were also significant for the age cohorts between 25 and 49 years old, with a tendency for the volume of change to decrease in progressively older cohorts.
- **Socio-economic group:** There was a substantial difference in the level of modal shift across the various socio-economic groups. The largest increase in walking trips occurred amongst respondents from social group 'E' (+13.1pp). There is a risk that the impact of the programme on this group may be overstated in these statistics, if some of the people changing mode have done so out of economic necessity. However, as socio-economic group 'E' only accounts for 17% of all HTS respondents, this effect does not have a material impact on the overall findings.



Smarter Travel Areas

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