

Transport and Environment Committee

10.00am, Friday, 11 October 2019

Evaluation of the 20mph Speed Limit Roll Out

Executive/routine Wards Council Commitments	Executive All 16, 17, 18, 19
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1. Recommendations

- 1.1. It is recommended that the Committee:
- 1.1.1 notes the results of the Council's initial 20mph monitoring programme, as detailed in the report;
 - 1.1.2 notes the independent evaluation of the impacts of 20mph speed limits in Edinburgh undertaken by the National Institute of Health Research (NIHR) project team;
 - 1.1.3 approves commencing the statutory process to add the additional streets, as detailed in table 3 of the report, to the 20mph network;
 - 1.1.4 approves the strategy for further actions the Council may wish to consider in streets where there may be continuing non-compliance with the new limits as set out in the report;
 - 1.1.5 notes that consideration is being given to the potential for further extension of the 20mph network and that a report on this subject will be brought to first meeting of this Committee in 2020; and
 - 1.1.6 notes that a further report on the analysis of road casualties will be presented to this Committee in 2021, three years after completion of the final phase of the 20mph network.

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Evaluation of the 20mph Speed Limit Roll Out

2. Executive Summary

- 2.1 This report presents an evaluation of the roll out of 20mph speed limits in Edinburgh. The evaluation examines changes to traffic speeds and volumes, public perceptions and behaviour, and air quality before and after the 20mph rollout. It also briefly considers initial indications in relation to changes in collisions and casualties.
- 2.2 Key findings are outlined below:
- 2.2.1 there has been a statistically significant reduction in average speeds of -1.34mph across the 66 speed survey locations where the limit was reduced;
 - 2.2.2 the highest reduction in average speed (-2.41mph) was for sites in rural west Edinburgh;
 - 2.2.3 findings reveal no evidence of displacement of traffic from 20mph streets to 30mph streets after implementation of the 20mph limit;
 - 2.2.4 support for 20mph is increasing but concerns remain regarding compliance; and
 - 2.2.5 casualties have fallen substantially since implementation, but it is not yet possible to ascribe reductions to the 20mph limit as opposed to an overall falling trend.
- 2.3 The report also includes a strategy of further actions the Council may wish to consider on streets where there may be continuing non-compliance with the new limits. Furthermore, it reviews a number of requests for streets to be added to the 20mph network and includes preliminary consideration of further pro-active expansion of the network.

3. Background

- 3.1 In March 2018, Edinburgh became Scotland's first city to implement a city-wide network of roads with a 20mph speed limit. The 20mph scheme was implemented to reduce the risk and severity of collisions, encourage people to walk and cycle and create more pleasant streets and neighbourhoods. It supports the aims of Edinburgh's City Centre Transformation (CCT) Project and the emerging City Mobility Plan (CMP) by improving the way the city and its residents can move about, enjoy spaces and places.
- 3.2 The Transport and Environment Committee approved the network of roads for the establishment of 20mph speed limits on [13 January 2015](#) in the context of the Local Transport Strategy 2014-2019. Subsequently, Committee approved an implementation plan on [17 March 2015](#) and a principal Traffic Regulation Order (TRO) for the phased introduction of the revised speed limit on [12 January 2016](#).
- 3.3 The approved network extends 20mph speed limits to the city centre, main shopping streets and residential areas while retaining a network of roads at 30mph and 40mph in the city suburbs. Approximately 80% of Edinburgh's streets are now included in the completed 20mph network.
- 3.4 The roll-out was undertaken in four construction phases, starting in May 2016 and completing in early March 2018. The timing and location of the limit's introduction by phase is indicated in Figure 1 below:

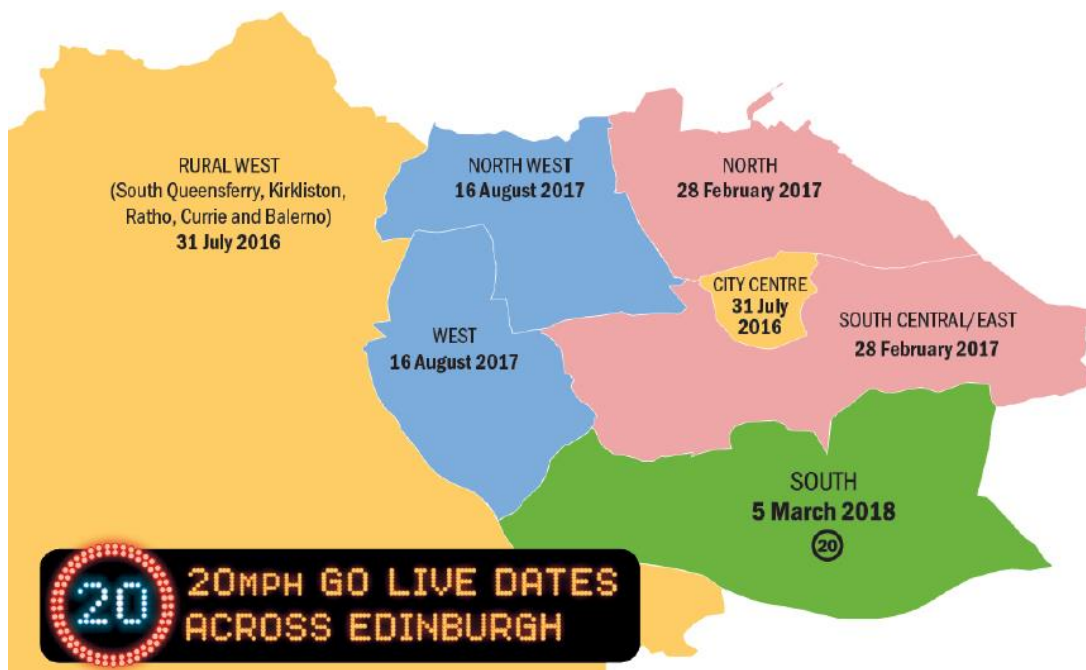


Figure 1

- 3.5 Prior to the commencement of the citywide rollout, approximately half of the city's streets were in previously designated 20mph zones. Under the Regulations that were in force at the time of their introduction, most of these were defined by the use of physical traffic calming measures, such as "cushions" or speed tables at the appropriate spacing. Subsequent changes to legislation mean that such measures are no longer legally required and the new 20mph limits have been introduced using signs and road markings only. However, to avoid a significant difference between the new signage only zones and these pre-existing zones, the decision was taken early in the design stage to install additional signage in the pre-existing zones to provide a visual consistency for road users across the city. Consequently, approximately 500km of streets required additional signage.
- 3.6 Driving more slowly can prevent injuries and save lives. Research by the UK Transport Research Laboratory has shown that every 1mph reduction in average urban speeds can be expected to result in a 6% fall in the number of casualties. It has also been shown survival rates are seven times higher when a pedestrian is hit by a car driving at 20mph, than compared to 30mph. Research also shows that a child is much less likely to be seriously injured or killed if hit by a car at 20mph compared to 30mph.
- 3.7 The reports of 13 January and 17 March 2015 advised that an initial report on the outcome of the programme would be presented to Committee approximately one year after final completion of the project, to allow sufficient time for preliminary data and feedback to be recorded and assessed.

4. Main report

Introduction to 20mph Evaluation

- 4.1 The evaluation of the 20mph speed limit seeks to assess its impacts on speeds, on road traffic collisions and on public attitudes and behaviour. Other areas of interest include whether there is any evidence of displacement of traffic, from streets with a 20mph limit to those where the limit remains 30mph, and on air quality. Table 1 below summarises the methods used to collect information on these issues.
- 4.2 In 2017, a major independent research project was instigated by the Scottish Collaboration for Public Health Research and Policy (SCPHRP), part of Edinburgh University, funded by the NIHR to examine the public health impacts of the introduction of 20mph zones based on a comparative study of Edinburgh and Belfast, reporting in 2020. Whilst this study is independent from the Council, data recorded by the Council is being shared with the University to inform its research.
- 4.3 The NIHR study focuses on public health outputs, in the process covering the majority of the areas of interest to the Council. The NIHR project team offered to provide an independent report on the Edinburgh experience based on the scope of its project and this is attached as Appendix 1.

Methodology and data sources

- 4.4 In developing the Scheme, a monitoring programme was established to assess various aspects of the 20mph network. A variety of 'before' and 'after' surveys have been undertaken to provide a baseline data framework and measure the success of the project.

Monitoring area	Information collection method
Traffic speeds and volumes (latter enabling examination of evidence of displacement from 20mph streets to 30mph streets)	Consultants Tracsis (Traffic and Data Services) were commissioned by the Council to record speeds and volume on 66 sites across the 20mph network and on 16 sites on 30mph roads, before and after implementation. Additional post implementation surveys were also undertaken on 150 streets where concerns were raised about compliance.
Road traffic collisions resulting in personal injury	The STATS19 database - a nationally collected data set of all road traffic collisions that resulted in a personal injury and were reported to the police within 30 days.
Public opinions, behaviours and attitudes	<p>Consultants Progressive were commissioned by the Council to conduct research into public opinions, behaviours and attitudes towards the new Scheme. Over 1,200 household interview surveys 'before' and 'after' were undertaken across the implementation areas. A full report on the post implementation evaluation by Progressive is attached as Appendix 2.</p> <p>A question about level of support for 20mph was included in the Edinburgh People Surveys (EPS) 2016 – 2018. The EPS is an annual survey of around 5,000 residents commissioned by the Council.</p>
Air Quality	The Council's six real time air quality monitoring stations

Table 1: Monitoring Methods

Main Findings

Speeds and volumes

- 4.5 The speed data used in the analysis covered 66 streets where the speed limit was reduced from 30mph to 20mph as part of the roll out.
- 4.5.1 For the 66 locations that had their speed limit changed to 20mph, average 'before' speeds were 23.63, while 'after' speeds fell to 22.29mph; an average fall of -1.34mph.
- 4.5.2 The largest reduction in average vehicle speed was -2.41mph and was observed in rural west Edinburgh.
- 4.5.3 A comparatively higher reduction in average speed, -2.03mph, was observed on streets where the average 'before' speed was greater than 24mph.
- 4.5.4 Statistically significant reductions were observed on all types of streets. The highest reduction in speed (-1.59mph) was noted for main streets with the lowest reduction in speed on residential streets (-1.38mph).
- 4.5.5 The number of vehicles with average speeds that were 20mph or less increased following the rollout as shown in Figure 2 below.
- 4.6 Outputs from analysis of post implementation surveys on 150 streets where concerns were raised about compliance show an average speed of 21.5mph.
- 4.7 There was no evidence of a noticeable change in the average volume of traffic after implementation on the 16 streets surveyed, where a 30mph speed limit was retained.

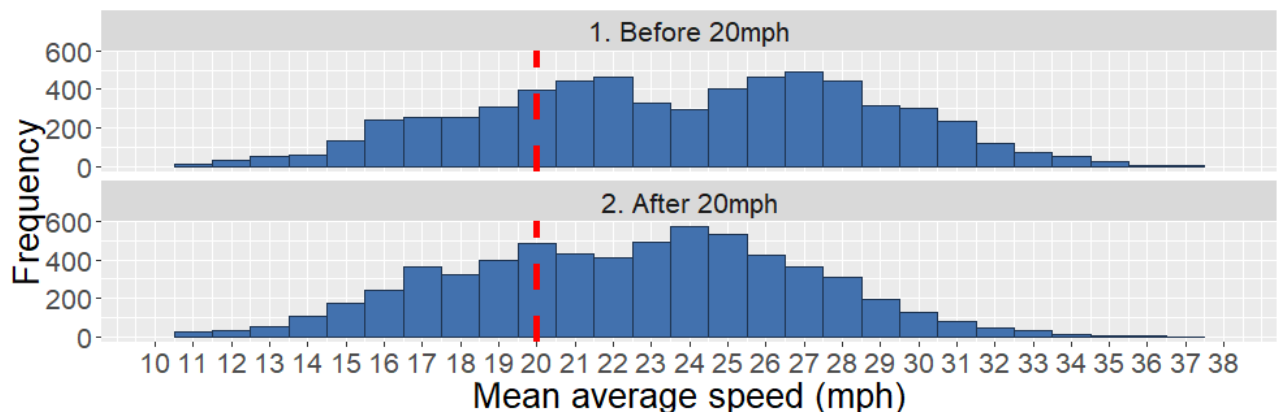


Figure 2: Histogram of average speeds on 20mph streets in the City of Edinburgh; Data for this figure consists of 12672 observations; average speed observations for 192 time points for each of the 66 monitored sites.

Road traffic collisions

- 4.8 The first 11 months data after full scheme implementation across the city indicate a substantial reduction in annual numbers of road traffic collisions and casualties compared to the three years before (See Appendix 1). This is encouraging; however it is currently too early to conclude whether the limit has reduced casualties beyond what might have been expected. Further casualty data, and more detailed analysis emerging from the SCPHRP study over the next year, may enable firmer conclusions on this issue to be reached.

Public opinion, behaviours and attitudes

- 4.9 Findings from the post implementation evaluation by Progressive reveal broad support for the introduction of 20mph speed limits, in both the pre and post implementation surveys. Before implementation of the speed limits, a total of 58% supported it overall (20% said they strongly supported it). In the post implementation survey, this had increased to a total of 65% supporting the scheme (with 24% strongly supporting it).
- 4.10 Strength of support tended to reflect levels of concern about traffic speeds; for example, those with children in the household tended to be most concerned about safety and were also more supportive of the speed limits.
- 4.11 Over a third of respondents in the post implementation survey stated that the introduction of the 20mph speed limits had a positive impact on the quality of life in their neighbourhood.
- 4.12 Evidence of impact on behaviours is less conclusive: many of the perceptions and behaviours monitored before implementation did not change significantly in the post implementation survey and the majority of respondents stated that they saw 'no difference' or that key perceived potential impacts (such as increases in congestion, more walking, better air quality, etc) remained unchanged since implementation.
- 4.13 Results from the question in the Edinburgh People Survey revealed that the majority of residents support the 20mph speed limits, although there was a decrease from (59%) in 2016 to (55%) in 2018 (in 2018 18% were neutral or didn't know, 26% opposed) . Findings show a wide variation of levels of support across the city, with the strongest level of support in the City Centre ward (62%) and the lowest in the Colinton/Fairmilehead ward (44%). Even in the areas of lowest support, however, more people supported the limit than opposed it (34% opposed in Colinton/Fairmilehead, 20% opposed in City Centre) .
- 4.14 In December 2018, community councils, residents' associations and stakeholder organisations were invited to submit comments and observations regarding the implementation of 20mph. Speeding and lack of enforcement were identified as the areas of greatest concern. Feedback also revealed strong support for additional measures to reduce speeds. The most commonly reported positive impacts were in relation to safety and a better environment for walking and cycling.

Walking and Cycling

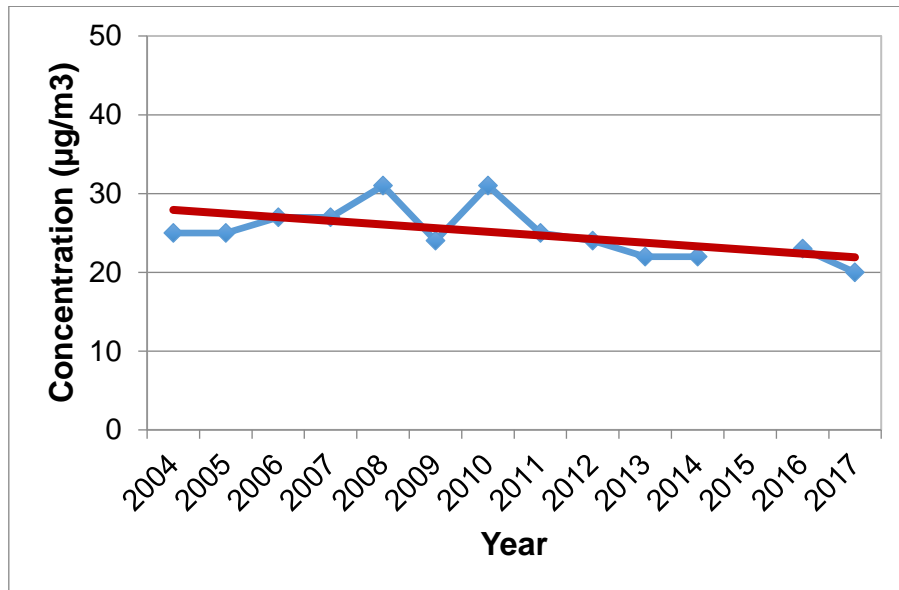
- 4.15 The Council is currently upgrading systems for analysing data from walking and cycling counters. Results are not yet available but will be shared with the NIHR project team for inclusion in their report in 2020. It is also intended to report to Committee on an ongoing basis in the future on modal shift.
- 4.16 Findings from the post implementation perception study by Progressive, revealed that although the overall proportion of people using active travel options has not increased, a higher proportion of those who do walk and cycle in the post implementation survey reported the amount of walking/cycling that they do had increased in the last year (from 11% to 18%). In addition, more respondents said they thought traffic speeds were 'very safe' for cycling following implementation.

Air quality - pollution trends

- 4.17 The relationship between speed and air quality is complex and influenced by a mix of factors including vehicle type, brake and tyre wear, variability and consistency of driving speed and the nature of the road environment.
- 4.18 Studies elsewhere have so far not proven either a positive or negative effect on air quality: driving at 20mph causes some emissions to rise slightly and some to fall. Reduced acceleration and braking may help to reduce fuel consumption and associated emissions. Some environmental benefit from the change is expected from helping to unlock the potential for walking or cycling short distances instead of driving.
- 4.19 Under the Environment Act 1995 and the associated Local Air Quality Management (LAQM) framework, all local authorities have a duty to review and assess air quality in their areas against national pollution objectives. Nitrogen Dioxide (NO₂) and Particulate Matter PM₁₀, are typically the pollutants of concern in most urban areas in the UK. Edinburgh has a well-established monitoring regime for these pollutants and publishes reports annually on the monitoring data and trends.
- 4.20 Measurement is by approved automated analysers housed in air quality stations, which are located at roadside and background sites. Additional NO₂ monitoring is carried out across the city using passive diffusion samplers. Generally, samplers are located at or close to residential building facades on radial transport routes in and around the city and reflect worst case exposure.
- 4.21 Nitrogen Dioxide (NO₂) concerns in Edinburgh are predominantly related to vehicle emissions, while PM₁₀ arises from many different sources. Improvements in air quality are assessed by analysis of long term trend data. Short term results are influenced by weather and temporary events such as local traffic diversions and road works.

4.22 Generally, all NO₂ automatic monitoring locations in Edinburgh show a downward trend in NO₂ concentrations - see Graph 1 for an example at the urban background monitoring site at St Leonards. [National statistics](#) (2017) comparing 10-year and 5-year trends, also show similar patterns. The figures for 2017, during which the 20mph limit was in place across most of inner Edinburgh for most of the year (see Figure 1), do not give any cause for concern in relation to the impact of the 20mph limit.

Graph 1 Trend in Nitrogen Dioxide Concentrations ($\mu\text{g}/\text{m}^3$) at St Leonard's (Annual Mean NO₂ at an Urban Background site)



4.23 The following Table is a summary of NO₂ trends at all automatic monitoring locations in Edinburgh.

Table 2: Summary of Nitrogen Dioxide (NO₂) trends measured at Automatic (Continuous) Monitoring Sites in Edinburgh

Monitoring Location	Site Type	Trend in Annual Mean NO₂ (Years)	Concentrations of NO₂
St Leonard's	Urban background	(2004 to 2018) ↓	Slightly decreasing
Gorgie Road	Roadside	(1999 to 2018) ↓	Slightly decreasing
Salamander St	Roadside	(2009 to 2018) ↓	Slightly decreasing
Currie	Suburban	(2010 to 2018) ↓	Slightly decreasing
Glasgow Road	Roadside	(2012 to 2018) ↓	Slightly decreasing
St John's Road	Kerbside	(2007 to 2018) ↓	Decreasing

Source: CEC (2018), Annual Air Quality Progress Report

Police engagement and enforcement, and speed limit compliance

- 4.24 The new 20mph limit relies on a shift in driver behaviour, which takes time to embed. The Council continues to work with the police and the public to raise awareness of 20mph and encourage compliance through road safety education and prevention activities.
- 4.25 Streets with a number of collisions where speed has been a factor, where concerns have been raised and areas near schools are likely to be prioritised for enforcement activities. Since the 20mph programme began, there have been 256 road checks on 20mph roads, 1,518 warnings issued, 94 conditional offers issued and 21 reports to the Procurator Fiscal. Officers continue to conduct proactive speed checks, where operational demands allow.
- 4.26 Social media continues to be used extensively by the Council and the police to promote 20mph. Activities, such as [Pop Up Bob](#), are used to help deter speeding and improve road safety. Pop Up Bob, a life size cut out of a police officer holding a speed camera, is not intended to replace real officers but can be utilised by schools and in areas where speeding has been reported in order to serve as a reminder. Road Safety and Active Travel officers have also been working jointly with the police to implement a roadside education pilot project. As part of roadside education, police stop speeding drivers and assess if they are suitable for an education session at the roadside as opposed to being issued with the usual penalty. Central to the delivery of roadside education is a short video, [Kids to Camera](#), featuring local school children who ask speeding drivers to reflect on their driving behaviour.
- 4.27 Police Scotland is also considering other methods such as community speedwatch to maximise compliance with 20mph. Community speedwatch is a national initiative where active members of local communities join with the support of the Police to monitor speeds of vehicles using speed detection devices.
- 4.28 In response to comments received about a perceived lack of compliance, the Road Safety team has carried out additional post implementation speed surveys to assess if further action was needed. The list of 227 reported streets is attached as Appendix 3. This includes sites already surveyed and those waiting to be surveyed. The results of the speed surveys will be used to identify whether additional measures are needed. The average speed recorded across the 150 streets surveyed to date was 21.5 mph.

Impact on bus journey times and service reliability

- 4.29 We have sought the views of Lothian Buses and they have advised that, in their view, any increases in bus journey times and impact on service reliability due to the introduction of 20mph are minimal in comparison to increases in journey times and resources across the city resulting from other factors.

Additions and amendments to the 20mph network

- 4.30 The introduction of the citywide 20mph limit attracted a substantial public response over the implementation and post implementation monitoring period. Officers responded to a very high volume of e-mails and other communications. Initially, the most frequently received comments were in relation to perceived lack of evidence of public support and perceived adverse impacts on congestion, pollution and journey times. However, the nature of the comments changed over the duration of the project.
- 4.31 After completion of construction phase 2 in February 2017, comments focussed more on requests for streets to be added to the network, perception of this limit and concerns about non-compliance and requests for additional measures to reinforce it. A similar pattern continued throughout phases 3 and 4 with more comments relating to perceptions of speed in the local area.
- 4.32 A record has been maintained over the implementation period regarding observations, requests and comments on specific streets. This feedback has been used as the basis for focussing investigations into potential alterations to the network.

Methodology for the assessment of 20mph streets, and potential further extension of 20mph network

- 4.33 A number of streets have been assessed for potential inclusion in the 20mph network using a methodology that considers factors such as the character of the street, width of street, number of collisions, walking and cycling levels, presence of traffic calming measures, bus frequency, evidence of local public support and proximity to generators of pedestrian journeys such as schools, parks and places of worship. The following factors also need to be taken into consideration :
- 4.33.1 Seeking to minimise the number of changes of speed limit that users will encounter. Seeking to locate changes of speed limit in logical locations.
 - 4.33.2 Seeking to maintain a coherent network of 30mph (and 40mph) streets.
 - 4.33.3 Streets in the city centre to retain 20mph.
 - 4.33.4 Roads with a predominantly rural character to retain current speed limits.
- 4.34 The 30mph roads listed in Table 3 have been considered for inclusion in the 20mph network. The streets considered have been largely based on public requests, though the street linking Roseburn to Haymarket has also been assessed based on the major changes proposed as part of the City Centre West to East Link project.
- 4.35 These have been assessed using the above methodology and a recommended course of action is set out in Table 3 below. See also the section below discussing further extensions to the network. The recommendations are subject to TRO procedures involving a statutory consultation process.

Further extensions to the 20mph network

- 4.36 The initial 20mph network sought to achieve a suitable balance between delivering safer, more liveable streets and maintaining a coherent citywide network for longer distance movements, especially by bus, with a higher speed limit. Public support for the limit, and the requests for extension, indicate that there is an appetite for wider application, whilst early results are positive in relation to the project's core objectives.
- 4.37 Rather than adopting a purely reactive approach, it is considered that there is now a case for a further review of the road network that currently retains a limit of 30mph or more, with a view to increasing the coverage of the 20mph limit. It is proposed to bring a report setting out a proposed way forward on this issue to the first meeting of this Committee in 2020.
- 4.38 Further changes of speed limit to 20mph will need to be considered in tandem with proposals for reducing 40mph urban roads to 30mph (this is the subject of a business bulletin to this Committee).

Table 3 streets considered for adding to change of speed limit from 30mph to 20mph

Street	Action
Balgreen Road	Change to 20mph from Stevenson Road roundabout to Corstorphine Road
Bo'ness Road	Change to 20mph from Walker Drive to Echline Avenue
Cammo Road/Walk	Extend the 20mph limit along the residential frontages and principal access to the Cammo Estate
Cluny Gardens/West Mains Road/Esslemont Road	Change to 20mph
Craighall Road	Change to 20mph from Stanley Road to Ferry Road
Granton Road	Change to 20mph from Ferry Road to Granton Square
Greenbank Crescent/Oxgangs Avenue	Change to 20mph
Musselburgh Road (Eastfield)	Retain 30mph pending wider network review
Roseburn Terrace	Introduce 20mph from Murrayfield Gardens to Magdala Crescent
Salvesen Terrace (Marine Drive)	Introduce 20mph from West Granton Road to West Shore Road junction

- 4.39 Only a small number of comments were received identifying roads which the correspondents thought should revert to 30mph. The comments related to:
- 4.39.1 Craigentiny Avenue (residential street);

- 4.39.2 Marchmont Road (residential street);
- 4.39.3 Melville Drive (adjacent park – high pedestrian and cycling levels);
- 4.39.4 Regent Road (city centre, main road);
- 4.39.5 Slateford Road, eastern section (residential and shopping);
- 4.39.6 St John’s Road (local centre);
- 4.39.7 Braid Road (residential street); and
- 4.39.8 Scotstoun Avenue (residential street).

4.40 In the context of their consistency with the original criteria for the establishment of the network, it is considered that the 20mph limit on these roads should be retained.

4.41 In addition, a series of road safety interventions has been developed for implementation at Braid Road and proposals for traffic calming measures are being progressed for Scotstoun Avenue, utilising a developer’s S75 funding contribution.

Additional speed influencing measures

4.42 The Road Safety team undertakes an annual collision investigation into all streets within the City of Edinburgh Council area. This investigation is carried out using the collision details supplied by Police Scotland, which is responsible for the collection of all personal injury road traffic collision data within its force area. From this analysis it is possible to determine locations where the collision rate is giving cause for concern and where remedial works may require to be implemented.

4.43 Although the introduction of the citywide limit has begun to reduce average speeds, there are a number of roads where average speeds remain higher than the normal tolerance. Comments have also been received from the public requesting supplementary measures to reduce speeds including additional signage, the introduction of Vehicle Activated Speed Signs (VASS) and physical traffic calming features such as speed humps.

4.44 It is proposed that on streets where concerns have been raised, or where we become aware of higher average speeds, traffic surveys will be carried out to determine the average speeds and vehicle flows. This will enable the Road Safety team to analyse traffic conditions and reported collisions on specific streets to determine what further measures may be suitable for implementation on a site by site basis. This could include signage and road markings, targeted enforcement from Police Scotland or short term deployment of mobile vehicle activated signs.

4.45 Further physical traffic calming measures such as road humps or chicanes will only be considered if there is a significant collision history or where high vehicle speeds are not reduced sufficiently with soft engineering measures such as VASS and additional signage. Further information on possible speed reducing measures is included as Appendix 4.

5. Next Steps

- 5.1 The introduction of 20mph represents a major change for the city and the way we travel, live and work. The new lower speed limits rely on a shift in driver behaviour which takes time to become the norm (similar to wearing seatbelts). It is planned to take forward measures to sustain a culture of 20mph city driving. The Council will continue to work closely with Police Scotland and other partners to encourage compliance through high profile engagement activity and social media.
- 5.2 Analysis of road casualties usually covers a three year period to allow statistically robust conclusions to be made. The Road Safety team will continue to monitor the 20mph network to determine speed and casualty trends over a longer period of time. It is intended to report back to Committee three years after completion of the final phase of the network.
- 5.3 Subject to Committee approval, it is planned to take forward the statutory procedures to implement a 20mph speed limit on the roads as set out in Table 3.

6. Financial impact

- 6.1 The report recommending implementation of the 20mph network, approved by Transport and Environment Committee on 17 March 2015, advised an overall estimated cost of the project over three financial years (2015-18) to be £2.2m. This comprised £465k from the Transport Capital budget and £675k from Cycling Walking Safer Streets (CWSS) – a ring fenced funding source provided annually by the Scottish Government. It was anticipated that a further £1.08m was expected to be available from the Scottish Government's Community Links fund, administered by Sustrans, subject to successful annual funding bids.
- 6.2 In the three financial years of practical implementation (2015-18) the out-turn cost for the project amounted to £2.96m. This comprised Construction (£1,957k); Design, Contract and Project Management (£713k); Communications and Marketing (£230k) and Monitoring (£60k).
- 6.3 The difference between estimated and actual expenditure can principally be explained by the impact of actual construction costs and the uplift in tender returns over the three year period, and by the decision to extend the signage programme to encompass pre-existing 20mph zones to ensure that motorists experienced visual consistency over the whole city.
- 6.4 However in terms of the attribution of expenditure, the Council was successful in obtaining additional external and ring-fenced funding for the project, reducing the reliance on the Transport Capital budget. To end of financial year 2017-18 expenditure from this source was restricted to £393k. The remainder of the funding was sourced as follows: Community Links (£1.349m); Cycling Walking and Safer Streets (£1.038m), Smarter Choices Smarter Places (£180k).
- 6.5 This expenditure should be seen in the context of the potential cost of collision injury. At 2016 prices, the Department for Transport estimates of the monetary

value than can be attached to road traffic collisions involving personal injury are as follows per incident: Fatal - £2,053,814; Serious - £237,527; Slight - £ 24,911.

- 6.6 The costs of any additional measures that might be required on streets where there may be continuing non-compliance cannot be quantified at this time but it is anticipated that the costs can be met within the Transport Capital Investment Programme.
- 6.7 The costs of advertising and promoting the TRO necessary to reduce the speed limits on the additional streets detailed within the report are estimated at £3,000. These can be fully contained within the Transport managed Capital Investment Programme. Design and construction work, including installation of new signage and adjustment of existing signage on the additional roads is estimated at £30,000. This can be accommodated within the Road Safety allocation of the Transport Capital Investment Programme.

7. Stakeholder/Community Impact

- 7.1 The input of stakeholders, including local residents and groups, businesses, interest groups, people with protected characteristics and the general public has been gathered at each stage of the development of the project. A detailed communication and engagement plan supported scheme implementation, with each phase accompanied by a targeted awareness raising campaign to familiarise different road users with the scheme and encourage compliance with the new speed limit.
- 7.2 Communication channels included media promotion, outdoor advertising, lamp post banners, bus advertising, radio, leaflets, posters, videos, information packs and community events. General updates, photos, video clips and posts were added to [Council Twitter](#) and 20mph [Facebook](#) with links to the [programme website](#). This provided a cost effective way of empowering residents in Edinburgh to share with friends and enable wide distribution of information.
- 7.3 A partnership approach helped to ensure different target audiences were reached and that key messages were appropriately tailored. Core partners included, Police Scotland, Schools, Living Streets, Spokes, Localities, Sustrans and NHS Lothian.
- 7.4 The Education and Awareness Programme continues to build stakeholder support, highlight the benefits of a 20mph speed limit, involve businesses and partners, identify champions and engage schools and communities. A [community toolkit](#) has been developed to support residents and communities who want to see speeds reducing in their local area.

- 7.5 The positive impacts for sustainability relate to the principle that places are for people rather than motor traffic. Reducing speed on our roads, helps to create streets which are shared more equally between different road users. It also helps create a safer environment, encouraging people to walk and cycle and enjoy spending time in their neighbourhoods. It is also expected that environmental and air quality benefits will be realised if safer road conditions result in increased levels of walking and cycling.
- 7.6 An Integrated Impact Assessment (IIA) has been carried out and reviewed throughout the project. The IIA identifies a majority of positive impacts for people with protected characteristics.

8. Background reading/external references

- 8.1 [Transport 2030 Vision](#)
- 8.2 [Edinburgh's City Centre Transformation Project](#)
- 8.3 Local Transport Strategy Climate Change Framework
- 8.4 [South Central Edinburgh 20mph Limit Pilot Evaluation – Transport and Environment Committee, 27 August 2013 \(Item 7.3\).](#)
- 8.5 DfT Circular 01/2006 Setting Local Speed Limits
<http://www.dft.gov.uk/pgr/roadsafety/speedmanagement/dftcircular106/dftcircular106.pdf>

9. Appendices

- 9.1 Appendix 1 - Evaluation Report by NIHR Project Team
- 9.2 Appendix 2 - 20mph Monitoring of Public Opinion, Post Implementation Report by Progressive
- 9.3 Appendix 3 – List of streets for consideration of speed surveys post implementation
- 9.4 Appendix 4 - Potential Speed Reducing Measures

Report on key outcomes following the implementation of 20mph speed limits in the City of Edinburgh

*Dr. Glenna Nightingale and Professor Ruth Jepson on behalf of the NIHR 20mph evaluation
project team*

September 12th , 2019

This project is funded by by the National Institute for Health Research (NIHR) [PHR project grant: 15/82/12].
The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of
Health and Social Care



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KEY MESSAGES

1. Average speed was reduced by 1.34mph when considering 66 streets in which the 20mph limit was implemented and data was collected.
2. The number of vehicles with average speeds that were 20mph or less increased following the rollout.
3. Our results indicate a reduction of 38% in annual road traffic collision rates (overall) and by level of severity on 20mph and 30mph streets post speed limit introduction. (It should also be noted that collisions are falling across Scotland)

Executive Summary

Background

This report is prepared by the “Is twenty plenty for health?” project team, based at the University of Edinburgh and several other Universities around the UK. The project team is conducting an evaluation of the public health impact of the 20mph speed limit policies in Edinburgh and Belfast (results not reported here). This project is funded by the NIHR and final results will not be available until after August 2020.

The aim of this interim report is to provide an overview of changes in vehicle speed and volume and road traffic collision rates resulting in personal injury before and after the implementation of the 20mph speed limits in Edinburgh. Further analyses will include the use of time series and spatio-temporal models for assessing the trend (temporal and spatial) of road traffic collisions in the City of Edinburgh.

Findings

Vehicle speed and volume

The speed and volume data used in the analysis covered sixty-six 20mph streets. These streets were 30mph before the speed limit implementation and changed to 20mph afterwards.

- There has been a statistically significant reduction in average vehicle speed of -1.34mph for all 66 streets combined.
- The largest reduction in average vehicle speed was -2.41mph and was observed in zone 1b, Rural West Edinburgh.
- A comparatively higher reduction in average speed, -2.03mph, was observed in streets where the average speed before the speed limits was greater than or equal to 24mph.
- The frequency of average speed observations which were less than or equal to 20mph was greater after the speed limit implementation.
- There was a reduction post speed limit introduction in the number of drivers exceeding 20mph at speeds over 20mph (10%), 24mph (25%) and 30mph (41%).

Road traffic related collisions

- Within the entire city of Edinburgh boundary, a reduction in collision rates has been observed on roads (with either 20mph and 30mph speed limits) after the speed limit implementation with a decrease of 371 collisions per year. Similarly, a reduction has been observed for collision rates in the following categories:
 - Collision severity levels Killed and seriously injured, and slight,
 - Pedestrians, cyclists, and motorcyclists, and
 - Young children and the elderly.

Introduction

Edinburgh is the first city in Scotland to implement a 20mph speed limit on most of its streets, a move supported by organisations such as the World Health Organisation (WHO), the National Institute for Health and Care Excellence (NICE), the Royal Society for the Prevention of Accidents (ROSPA) and Police Scotland. The WHO recently made a call for 30kmph (slightly slower than 20mph) to be the limit wherever motorised traffic mixes with pedestrians and cyclists.

Edinburgh 20mph speed limit roll out

The City of Edinburgh council (CEC) has a long standing policy of introducing 20mph speed limits, initially focussed on residential areas and around schools. In 2012 a pilot project was launched in South Edinburgh to measure changes in vehicle speeds and volumes, road traffic incidents, and the attitudes of residents to walking, cycling, and the local environment. The benefits evidenced from the pilot include lower vehicle speeds in 85% of the 28 streets that were monitored, perceived improvements in the safety of streets for children, a perception of improved conditions for walking and cycling and strong support from residents of the area for the 20mph limit.

Findings from the pilot helped shape the council's Local Transport Strategy and, in particular, its approach to setting speed limits in Edinburgh. In June 2014, a draft network of streets was finalised for public consultation. The consultation attracted nearly 3,000 responses from a wide range of individuals and organisations with a majority (60%) supporting or strongly supporting the proposals and 36% opposing or strongly opposing them.

Councillors approved a city wide 20mph speed limit network for Edinburgh at the Transport and Environment Committee in January 2015. Prior to the launch of the 20mph project in July 2016, over 50% of Edinburgh's residential streets were already in 20mph zones. The approved network extended 20mph speed limits to the city centre, main shopping streets and residential areas while retaining a network of roads at 30mph and 40mph in the city suburbs.

The extension of 20mph limits aims to:

- reduce the risk and severity of accidents by reducing speed, increasing the safety and well being of all road users. This is in line with the Council's Vision Zero philosophy, working towards the provision of a modern road network where all are safe from the risk of death or seriously injury
- create more favourable conditions for pedestrians and cyclists in the city. The extensive network of 20mph streets will help embed the QuietRoutes and the Cycle Friendly City Programme in a context that is safe and comfortable for cyclists
- create streets that are attractive, social and people friendly

The 20mph speed limit is a sign-only scheme and does not involve the introduction of any physical traffic calming measures such as speed humps.

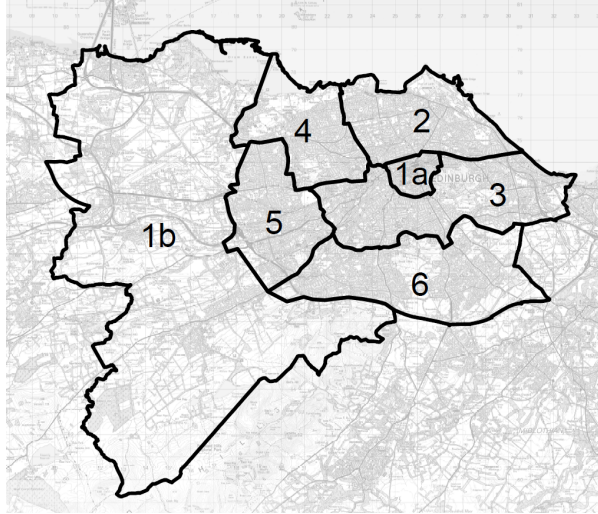


Figure 1: 20mph speed limit implementation zones in the City of Edinburgh

Implementation zones and timetable

The seven zones denote geographical areas within Edinburgh. The zones were South, West, North West, South Central/East, City Centre, rural west Edinburgh and City Centre. Implementation took place over a number of phases at different times; and the number of streets in which data on speed and volume were collected varied by zone (see Table 1). Each geographical zone was given a number and is shown in Figure 1.

Table 1: Implementation zones and timetable

Zones	Area	Implementation Phase	Operative Date	Speed Survey Sites
1a	City Centre	1	31 July 2016	7
1b	Rural West	1	31 July 2016	6
2	North	2	28 February 2017	18
3	South Central/East	2	28 February 2017	14
4	North West	3	16 August 2017	7
5	West	3	16 August 2017	9
6	South	4	5 March 2018	5

Research Questions

The following research questions are addressed in this report.

1. Was there a change in speed and volume of traffic in Edinburgh after the 20mph speed limit implementation?
2. Was there any displacement of traffic from 20mph streets to 30mph streets?
3. Was there a change in the rate of road traffic collisions (overall and by level of severity) in Edinburgh after the 20mph speed limit implementation?

Data and Methods

Data sources

The datasets analysed for this report are itemised as follows:

Speed and Volume

Monitoring data provided by the City of Edinburgh council for 66 monitored street (across the above mentioned seven geographical regions) which includes

- average speed by time of day,
- average volume per ranges of speed by time of day, and
- average volume by time of day.

Tracsis (Traffic and Data Services) were commissioned in early 2016 by the City of Edinburgh council to record speed and volume across the new 20mph network for these streets. The streets were chosen based on feedback from the Council's Local Transport & Environment Managers, feedback from the 20mph public consultation and random selection. The various categories covered in the sites chosen range from city centre, shopping, main and residential streets. The survey (survey apparatus in place for one week) records "before" data and "a year after".

Note that unless specified otherwise, the analyses for speed and volume are for streets which had speed limits changed from 30mph to 20mph after the speed limit implementation.

Road traffic related collisions

The research uses data recorded by Police Scotland (STATS19) within the City of Edinburgh Council boundary. The STATS19 database is a collection of all road traffic collisions that resulted in a personal injury and were reported to the police within 30 days of the collision. Only roads with 20mph or 30mph speed limits were included in the analyses for this dataset.

Analysis

The methods used in this report include:

- the use of descriptive statistics for vehicle speed and volume,
- the use of Student's t-tests for comparing average vehicular speed and volume in different categories, and
- the calculation of crude (basic) road traffic collision rates.

The crude (basic) road traffic collision rates are calculated by dividing the number of observed collisions by the length of the observation period in years. For all the calculations, the "before" period was of 36 months duration. The "after" period for the city wide calculations was approximately 12 months after implementation of the final phase of the network.

For the zone based rate calculations, the "after" period is taken as the time that elapsed between the date of implementation for that zone and the final date of data collection (February 28th 2019). The 20mph speed limit implementation follows a stepped wedge design.

Please note that the figures for the rate calculations were rounded off to the nearest whole number after all the calculations were done, and that the statistical significance for t-tests is taken at the 5% level.

Results

Vehicle speed

In general, we note that there has been a reduction in average vehicle speed of -1.34mph across the 66 streets surveyed. Figure 2 shows the distribution of the observed records of average vehicle speeds across the 66 streets under consideration. Data for this figure consists of 12672 observations; average speed observations for 192 timepoints for each of the 66 monitored sites.

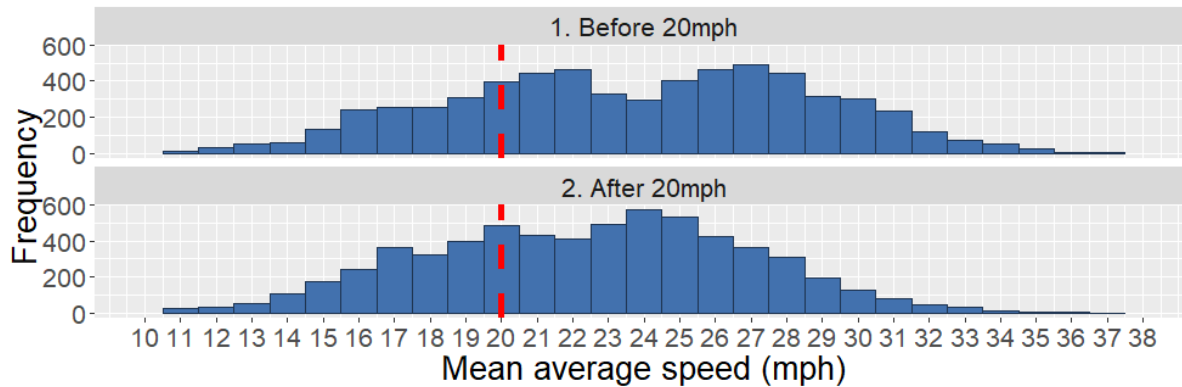


Figure 2: Histogram of average speeds on 20mph streets in the City of Edinburgh; data for this figure consists of 12672 observations; average speed observations for 192 timepoints for each of the 66 monitored sites.

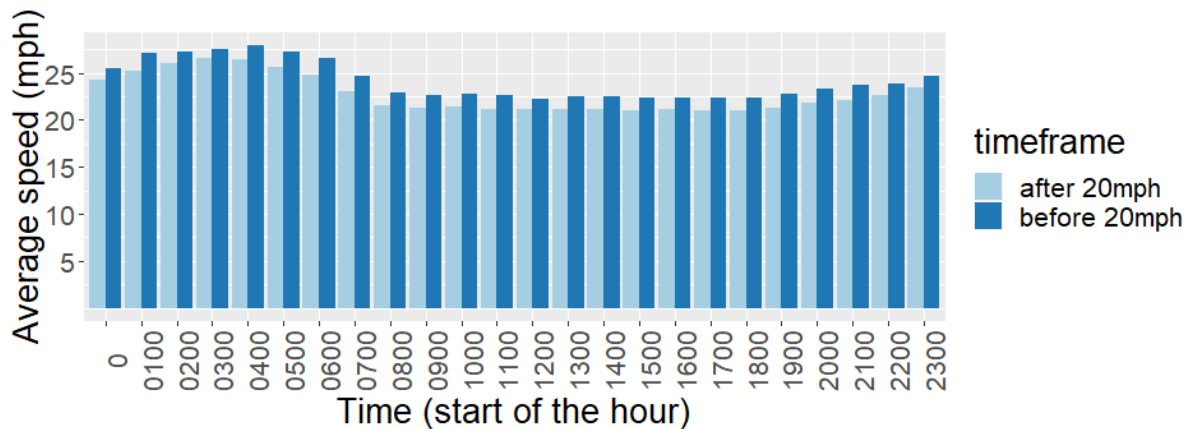


Figure 3: Average speeds on 20mph streets in Edinburgh by time of day

From Figure 2, we note that post 20mph speed limits, there is a higher frequency of speed observations less than or equal to 20.5mph and lower frequency of speed observations above 26.5mph. The red line in the figure denotes the 20mph speed marker.

A reduction in average speed has also been observed for all street categories considered, each day of the week and for streets with pre-20mph speeds greater than or equal to 24mph.

Differences in change in speed by time of day

Figure 3 shows the variation of the average vehicle speed by time of day. On visual inspection, it is noticeable that the average speed observations after the 20mph speed limits are consistently lower than that before 20mph. This is observed for each hour in the plot. Further work involves modelling the reduction of average speed controlling for variables such as time of day, and day of the week.

Differences in change in speed in streets with pre-20mph speeds greater than or equal to 24mph

Higher average speeds are associated with poorer health outcome (ie. personal injury resulting from road traffic collisions) and so it is important to know if speeds have been reduced in areas where speeds are relatively high. Streets with pre 20mph average speeds greater than or equal to 24mph were observed to

have a statistically significant reduction of average vehicle speed of -2.03mph. Streets which had pre 20mph average speed less than 24mph were observed to have a reduction of average vehicle speed of -0.72 mph (see Table 2).

Average change in speed in the different implementation zones

Table 3 provides a summary of change in average speed per implementation zone. Statistically significant reductions were observed for all zones except zones 4 and 6. This is a very crude (basic) comparison since the zones differ by

- number of streets,
- proportion of main to residential street categories,
- geographical area,
- traffic volume,
- density of road networks, and
- population sizes.

All of these will impact to some extent on average speeds and will be taken into account in other analyses we undertake at a later stage. For instance, the City Centre (zone 1a) is the smallest in size geographically but has a highly dense road network.

Overall, we note that Zone 1b (Rural West Edinburgh) has the highest difference in pre- and post-20mph average speed and Zone 6 (South) has a slight increase in average speed post-20mph. It is important to note that prior to the launch of the 20mph network in 2016, a high proportion of Zone 6 was already in 20mph speed limits and only 5 streets were surveyed in this area.

Average change in speed in the different types of streets

It has been hypothesised that the reduction in speeds may differ depending on the type of street. Streets were categorised by whether they were Main, Residential, Local shopping or City Centre streets. Statistically significant reductions in speed were observed for all the street categories considered. The highest reduction in speed, -1.59mph was noted for Main streets (see Table 4) with the lowest reduction on speed being seen in Residential Streets (-1.38mph).

Average change in speed by days of the week

It is interesting to consider whether the changes observed are for every day of the week, or differ by week days or weekends. Our results indicate that the difference in average speed was -1.34mph overall, with the lowest weekday reduction on a Monday (-1.16mph) and the highest on a Wednesday (-1.48mph). It might be of interest to policy makers that a statistically significant reduction in average speed was observed for every day of the week post 20mph speed limit implementation. See Table 2 for details.

Percentage of drivers exceeding 20mph

Finally, the percentage of drivers exceeding 20mph (observed separately for speeds over 20mph, 24mph and 30mph) post 20mph speed limits, is lower than that observed before the speed limit implementation. Speeds over 30mph showed the greatest reduction (See Table 5).

Vehicle volume

For the 20mph streets in the dataset (n=66), no statistically significant change in average vehicle volume was observed (See Table 6) after the 20mph speed limit implementation. This was observed across all time periods considered. For the 30mph streets in the dataset (n=16), no significant change in volume was observed after the speed limit implementation. For both pre and post 20mph, high levels of vehicle volume were observed (20mph streets) between 8:15 AM and 17:30 PM. For both before and after the 20mph speed limit implementation, the observed times of highest vehicle volume are similar to where the lowest average speeds were recorded.

Table 2: Summary of average speed (mph) overall

category	pre20mph	post20mph	difference	sd	95%c.i.1	95%c.i.2	p
7 Day Ave	23.63	22.29	-1.34	1.57	-1.72	-0.95	0.00
Fri	23.53	22.16	-1.38	1.70	-1.79	-0.96	0.00
Mon	23.48	22.36	-1.16	1.61	-1.55	-0.76	0.00
Sat	23.83	22.36	-1.47	1.64	-1.87	-1.06	0.00
Sun	23.91	22.58	-1.30	1.83	-1.75	-0.84	0.00
Thu	23.53	22.25	-1.23	1.81	-1.67	-0.78	0.00
Tues	23.51	22.05	-1.46	1.68	-1.87	-1.05	0.00
WD Ave	23.55	22.21	-1.34	1.59	-1.73	-0.95	0.00
Wed	23.52	22.04	-1.48	1.80	-1.92	-1.04	0.00
<24mph	20.09	19.37	-0.72	1.62	-1.28	-0.16	0.01
>=24mph	27.63	25.60	-2.03	1.19	-2.47	-1.60	0.00
All data	23.63	22.29	-1.34	1.57	-1.72	-0.95	0.00

Table 3: Summary of average speed (mph) by 20mph implementation zone

	all zones	zone 1a	zone 1b	zone 2	zone 3	zone 4	zone 5	zone 6
mean difference in speed (mph)	-1.34	-2.07	-2.41	-1.33	-1.51	-0.79	-1.18	0.41
standard deviation	1.57	1.58	1	1.57	1.32	1.15	1.39	2.4
95%c.i.1	-1.72	-3.54	-3.46	-2.11	-2.28	-1.86	-2.24	-2.57
95%c.i.2	-0.95	-0.61	-1.36	-0.55	-0.75	0.28	-0.11	3.39
P	0	0.01	0	0	0	0.12	0.03	0.72
number of streets	66	7	6	18	14	7	9	5
statistical significance*	yes	yes	yes	yes	yes	no	yes	no

* statistical significance is taken at 5% level

Despite there being no statistically significant change in volume after the 20mph speed limit implementation, there was an observed shift (on visual inspection) in the levels of vehicle volume at various speed ranges (20mph streets). As seen in Figure 4, there is an increase in vehicle volume at lower speeds and a decrease in volume at higher speeds. In particular, for the speed range 30-35 mph, there was a 41% decrease in vehicle volume, whilst for speed range 15-20mph there was an observed 26% increase in volume.

Displacement of traffic speed from 20mph to 30mph streets

Displacement of traffic from 20mph streets to 30mph streets was investigated in zone 3 only, since this was the only zone with sufficient data on both 20mph and 30mph streets.

The average difference in vehicle speed observed (pre- and post-20mph speed limit implementation) for 20mph streets was compared to that observed for 30mph streets. The difference observed (average difference in vehicle speed for 20mph streets, and average difference in vehicle speed for 30mph streets) was not found to be statistically significant.

Despite the lack of statistical significance in the difference in traffic volume in the abovementioned tests, it is worth noting that the volume in 20mph streets in zone 3 was reduced by 207 vehicles post-20mph whereas, in 30mph streets in zone 3, the reduction in volume was 39 vehicles.

Road traffic related collisions - city wide

The research uses data recorded by Police Scotland (STATS19) within The City of Edinburgh Council boundary. The STATS19 database is a collection of all road traffic collisions that resulted in a personal injury and were reported to the police within 30 days of the collision. As previously indicated, the streets considered in the analysis for this section are those which have either 20mph or 30mph speed limits.

Table 4: Summary of average speed (mph) by street category

category	pre20mph	post20mph	difference	sd	95%c.i.1	95%c.i.2	p
Main streets	24.26	22.68	-1.59	1.46	-2.02	-1.16	0
Residential streets	23.61	22.23	-1.38	1.60	-1.78	-0.98	0
Local shopping streets	24.08	22.58	-1.50	1.52	-1.96	-1.05	0
City centre streets	23.85	22.36	-1.49	1.66	-2.10	-0.88	0

Table 5: Percentage of vehicles speeding over 20mph

	vehicles>20mph	vehicles>24mph	vehicles>30mph
before	74.86	55.06	17.62
after	67.23	41.21	10.49
% reduction	10.19	25.16	40.46

Ideally, an analysis aimed at assessing the impact of a policy intervention (such as the 20mph speed limits) on road traffic collision rates would use data from multiple years pre- and post-policy intervention. For this study, due to the limited availability of post-20mph data on road collisions (and the fact that the intervention “dosage” was completed in March 2018), city wide data post-20mph was obtained over a period of approximately 12 months.

Crude (basic) collision rates were calculated for various subgroups (See Table 8) in the data. The groups considered are:

- the City of Edinburgh Council boundary,
- collision severity - slight, and killed and seriously injured, and
- vulnerable road users: children (under 16yrs), elderly (over 65 yrs), pedestrians, cyclists, and motorcyclists.

For the city wide analyses, our results indicate a reduction in the rate of road traffic collisions in each of the considered subgroups. In Table 8, the last two columns provide the difference and percentage difference in collision rates. Negative signs in these two columns indicate that there was an observed reduction in the collision rate post-20mph.

For the analysis, the before period consisted of data from ‘31-Jul-2013’ to ‘30-Jul-2016’ (approximated to 3 years) and the after period consisted of data from ‘06-Mar-2018’ to ‘28-Feb-2019’ (approximated to 1 year). The period between ‘31-Jul-2016’ and ‘05-Mar-2018’ was excluded from the analysis since the implementation of 20mph speed limits varied during that period.

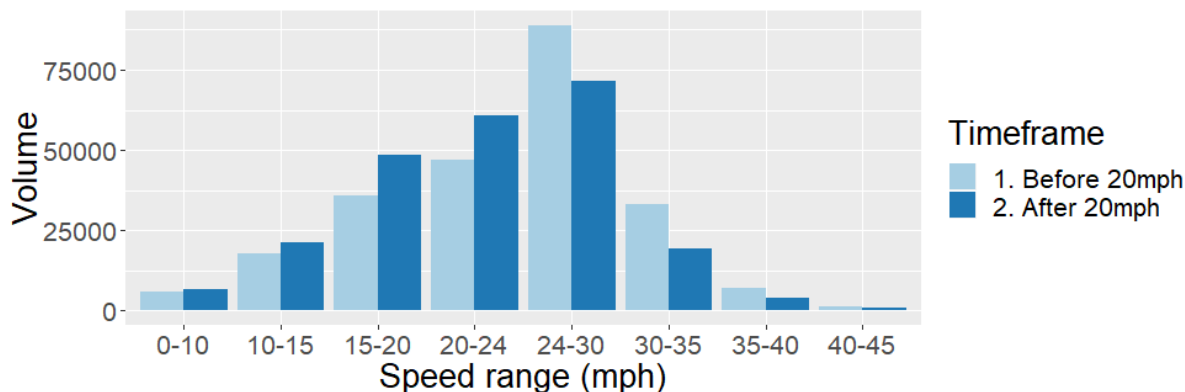


Figure 4: Average volume by speed range pre and post 20mph

Table 6: Summary of average vehicle volume

category	pre20mph	post20mph	difference	95%c.i.1	95%c.i.2	p
all zones	3641	3555	87	-112	286	0.39
zone 1a	2822	2847	-25	-145	95	0.63
zone 1b	5572	5321	250	-2396	2896	0.82
zone 2	4423	4279	144	-78	367	0.19
zone 3	4169	3962	207	-80	494	0.14
zone 4	3035	2954	82	-81	245	0.27
zone 5	2163	2415	-252	-658	154	0.19
zone 6	1690	1569	121	-109	351	0.22
main streets	5750	5512	238	-219	695	0.30
residential streets	1896	1924	-28	-142	86	0.62
shopping	7252	6647	606	-477	1688	0.23
citycentre	5843	5733	109	-941	1159	0.82

Table 7: Summary of average vehicle volume for 30mph streets in zone 3

Summary for 30mph streets in zone 3	
pre20mph	4957
post20mph	4918
difference	-39
95%c.i.1	-1215
95%c.i.2	1136
p	1

The results reveal a preliminary indication of the effect of the 20mph speed limits, but do not provide conclusive evidence of the effect of 20mph on road traffic related collisions. It is important to account for the already decreasing trend in collisions in the City of Edinburgh in further analyses.

Road traffic related collisions for the different 20mph implementation zones

In Table 9 we note that the crude (basic) collision rates observed after the 20mph speed limit implementation are lower than that observed before. As mentioned earlier, the “before” period for the calculation consists of 36 months whilst the “after” period is taken as the time interval between the speed limit in a given zone and the final date of data collection, February 28th 2019.

Since the speed limit implementation followed a stepped wedge design, the “after” period varies between zone, and the reductions in collision rates documented in this report are based on a shorter “after” time period. Table 9 provides details on the length of the “before” and “after” periods associated with the calculations for each zone (in months).

As in Table 8, the last two columns provide the difference and percentage difference in collision rates. Negative signs in these two columns indicate that there was an observed reduction in the collision rate post-20mph.

Important considerations in further analyses would include consideration of key factors such as:

- the population size for each zone,
- the proportion of streets in each zone which are residential,
- the index of deprivation associated with each zone,
- the number of streets sampled in each zone and
- the proportion of streets for which the speed limit was switched to 20mph.

The zone with the greatest reduction in collision rates is Zone 3 (South Central/East) and the zone with the greatest percentage reduction in collision rates is Zone 6 (South).

Table 8: Crude annual road traffic collision rates - city wide, severity, vulnerable groups; columns 2 and 3 provide the number of collisions observed pre and post 20mph respectively.

	collisions pre-20mph	collisions post-20mph	rate pre-20mph	rate post-20mph	diff in rates	perc.diff.rates
City wide						
city wide	2949	612	983	612	-371	-38
Collision severity						
Slight	678	134	226	134	-92	-41
Killed and seriously injured	187	48	62	48	-14	-23
Vulnerable ages						
children	304	62	101	62	-39	-39
elderly	395	104	132	104	-28	-21
Cyclists/motorcyclists						
cyclist	672	155	224	155	-69	-31
motorcyclist	266	42	89	42	-47	-53
pedestrians	865	182	288	182	-106	-37

Note:

before period: 36 months, after period: approximately 12 months

Table 9: Crude annual collision rates (per 20mph implementation zone) ; columns 2-3 provide the number of collisions observed pre and post 20mph respectively

zone	collisions pre-20mph	collisions post-20mph	rate pre-20mph	rate post-20mph	diff in rates	perc.diff.rates
zone 1a City Centre	480	330	160	132	-28	-18
zone 1b Rural West	98	66	33	26	-6	-19
zone 2 North	675	302	225	151	-74	-33
Zone 3 South Central/East	878	421	293	210	-82	-28
zone 4 North	194	83	65	55	-9	-14
zone 5 West	301	94	100	63	-38	-38
zone 6 South	219	38	73	41	-32	-43

Note:

before period: 36 months (all zones), after period: 30 months (zones 1a, & 1b), 24 months (zones 2 & 3), 18 months (zones 4 & 5), 12 months (zone 6)

From Table 9 it is clear that the rate of collisions is lower than that observed before.

Conclusions

The topic of 20mph speed limits is of national interest across the UK. A recent report (Bornioli, 2019) indicates that the impact of the 20mph speed limits in Bristol was accompanied with reduction of not only speed, but road traffic collision rates. Our report is supportive of these conclusions.

Answering the research questions

The following research questions were asked in this report:

- Was there a change in speed and volume of traffic in Edinburgh after the 20mph speed limit implementation?
- Was there any displacement of traffic from 20mph streets to 30mph streets?
- Was there a change in the rate of road traffic collisions (overall and by level of severity) in Edinburgh after the 20mph speed limit implementation?

Was there a change in speed of traffic in Edinburgh after the 20mph speed limit implementation?

Yes. The results in this report point to a statistically significant reduction in average vehicle speed, with the highest reduction observed for zone 1b, Rural West Edinburgh of -2.41mph. Additionally, we note a relatively larger reduction in average speeds on streets with higher speeds before the speed limit implementation.

Was there a change in volume of traffic in Edinburgh after the 20mph speed limit implementation?

No. There was no evidence of a change in the average volume of traffic after the 20mph speed limit implementation.

Was there any displacement of traffic from 20mph streets to 30mph streets?

No evidence of this for zone 3. In terms of whether there was any displacement of traffic from 20mph streets to 30mph streets, the results for zone 3 (South Central/East) provide a preliminary indication that there was none. Comparisons for the other implementation zones were not done due to lack of data on 30mph streets in these zones.

Was there a change in the rate of road traffic collisions (overall and by level of severity) in Edinburgh after the 20mph speed limit implementation?

Yes. This was observed for the city wide analysis. Our preliminary models (Popov et al, not reported here) indicate that the decrease in road traffic collisions resulting in personal injury across the City of Edinburgh council boundary after the speed limit implementation is greater after the speed limit implementation. These models are based on data from 1996 to 2017.

Future work involves incorporating 2018 data in the abovementioned models and quantifying the impact of the 20mph speed limit on vehicle speed and on road traffic collision rates. These will be conducted in the framework of a natural experiment evaluation (Craig et.al, 2012).

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Acknowledgements

We would like to acknowledge the following people and organisations for their contributions; Negus Chitupa-Shoniwa (University of Edinburgh MPH student) for his role in data entry, cleaning, and preliminary data analysis of average volume and speed change, Dr Neil Craig for his advice on calculating the value of collisions avoided, and Jillian Manner (researcher, SCPHRP) for undertaking the perceptions survey. We express thanks also to the City of Edinburgh council, the Scottish Government and Sustrans for providing us with the data we used in the analyses.



progressive

City of Edinburgh Council

20mph Monitoring of Public Opinion
Post-Stage Report

Final Report
September 2019





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1 Executive summary

1.1 Background and objectives

The City of Edinburgh Council (CEC) has a long standing policy of introducing 20mph speed limits, initially focussed in residential areas and around schools. Following a consultation exercise and a successful pilot in the South Edinburgh area, the Council's Transport and Environment Committee approved proposals for the network of 20mph roads for the city. The speed limits were implemented across six zones in four phases of construction across the city between July 2016 and March 2018.

An overall monitoring programme assessed various aspects of the 20mph network. Tracking public opinion, behaviours and attitudes is a key strand of the monitoring programme and Progressive was commissioned by CEC in December 2015 to conduct research into public opinions of the 20mph scheme. The aim of the research is to assess changes in perceptions, attitudes and behaviours in relation to:

- Impact of vehicle speeds and traffic volumes
- Road safety in the local area
- Walking and cycling activities
- Community spirit and quality of life
- Awareness of 20mph speed limits.

This report provides the results of the Post-Stage survey, conducted across all six zones in Spring 2019, three years after the Pre-Stage survey and 1 to 2.5 years after implementation of the speed limits depending on the zone.

1.2 Method and sample

In total, 1,215 interviews were conducted with Edinburgh residents during February and March 2016 (Pre-Stage), and 1,204 in February and March 2019 (Post-Stage). The survey was conducted in-home by Progressive's interviewers using Computer-Aided Personal Interviewing (CAPI).

The sample was designed to ensure representation across the six implementation zones for the 20mph scheme. Interviewers were given a random selection of postcode areas to work in and were asked to ensure interviews were conducted across different localities in each zone. Quotas were also set for age, gender and working status to ensure a broadly representative sample was achieved. The same sampling approach was used in both waves, to ensure consistency in the Pre and Post surveys.

There were some slight differences between the Pre and Post samples on variables where no quotas were set. Post-Stage data has been weighted to the Pre-Stage profile in relation to street type (i.e. whether respondents live on a busy main road or a quiet residential street). This ensures that the data is comparable and any changes in results are not due to differences in responses between residents of quieter or busier streets.

1.3 Key findings

1.3.1 Current travel behaviour

Walking was the most commonly used mode of transport among survey respondents, in both waves – in the Post wave, 66% said they travelled on foot at least several times a week. Car or van was the next most often used means of travel (55% did this at least several times a week), followed by bus or coach (40%).

In terms of other active travel choices, just under a fifth (17%) of respondents in the Post wave said that they ever cycle, although only a small number do so frequently – 5% said they do this at least several times a week.

Differences between the Pre and Post waves did not give a clear-cut picture of impacts of the 20mph speed limits, which were at least in part designed to encourage active travel choices. Car use was relatively consistent between waves, although more now said they drive every day (35%, compared to 28% in the Pre wave). However, more of those who travel by car in the Post wave said the amount they travel by car had **decreased** in the last year (9% v 5% Pre). Overall bus use had gone down, with more now saying they never travel by bus (23% v 15% in the Pre wave). However, among those who did travel by bus, more now reported that their levels of use had **increased** in the last year (15%, v 7% Pre).

In terms of active travel, fewer respondents now reported that they travel by foot frequently (66% v 71% Pre), but among those who do, there had been an increase in the proportion reporting that the amount they walk had **increased** in the last year (17% v 10%). Similarly, while there had been no change in the findings in relation to cycling behaviour among the whole sample, among those who do cycle there had been a slight increase in the proportion saying they cycle more than they did last year (though this was significant at the 90% rather than 95% level). The findings therefore suggest that the speed limits may have encouraged people who were already using active travel methods to do so more, but have not necessarily encouraged people who didn't already walk or cycle to switch to these means of transport.

1.3.2 Children's travel

Across the sample as a whole, around three in ten (28%) of respondents reported there were children in the household. The majority of children travel to school on foot, although there was some variation by the age of child, with a greater proportion of secondary school aged children travelling to school by bus (although this proportion had fallen in the Post wave, from 36% to 21%). The proportions travelling to school by car were relatively consistent across age groups, although this had increased among primary school children compared to the Pre wave, with 37% of upper primary and 29% of lower primary pupils now travelling to school by car. There does not appear to have been any impact of the speed limits in terms of encouraging more active travel to school.

Respondents with children in the household expressed a certain amount of concern about danger from traffic in their street: 56% agreed they worry about this. However, this is an improvement since the Pre-Sage, when 70% agreed. There has also been a drop in the proportion agreeing they worry about their children mixing with other children in their street without any control (from 42% to 32%), but no change in levels of concern about stranger danger (60% Pre, 51% Post).

1.3.3 Perceptions of traffic speeds and safety

The majority of respondents in the Post wave felt that traffic speeds, outside of rush hours, were about right on their own street (70%) and on main roads in the area (55%). However, a substantial minority felt that they were too fast (27% for their own street and 37% for main roads). In the Post wave, respondents were less likely to say speeds on their own street were too fast (27% v 32% in the Pre wave) – although they were more likely to state that speeds on main roads were too slow (7% compared to 2%).

Despite some concerns about traffic speeds on local streets, respondents generally felt that traffic speeds were safe when cycling or walking in the area themselves – for example, 87% in the Post wave felt quite or very safe walking in the area, and this is consistent with the Pre wave (87%). Although the majority of respondents did not cycle, among those who answered this question 71% felt that traffic speeds were quite or very safe for cycling in the area. There had also been a decrease in the proportion saying cycling was unsafe overall (very or slightly) in the Post wave (26% v 33%) – driven by a drop in the proportion saying ‘very unsafe (from 10% to 5%) – and an increase in the proportion saying they thought speeds were ‘very safe’ (from 11% to 17%).

Although most felt that it was safe for children walking in the area, just under a third expressed concern (32% in the Pre wave, 28% in the Post wave). However, this concern had decreased since the Pre wave (driven by the proportion who said it was ‘very unsafe’ (from 12% to 7%).

There was also a substantial amount of concern about safety for children cycling in the area, with 47% reporting traffic speeds to be very or slightly unsafe in relation to children cycling. However, this was an improvement compared to the Pre wave, when 55% said this – there was also a drop in the proportion saying ‘very unsafe’ (from 23% to 16%).

1.3.4 Awareness of and support for the 20mph scheme

There was a relatively good level of awareness of the speed limits in the Post-Stage survey, with the majority saying they had heard of the scheme (85%). However, 14% were not aware and 1% said they did not know. Awareness was higher among drivers, although it is worth noting that 7% of drivers living in the six Zones stated they were unaware of the 20mph limits, despite the limits being implemented for at least a year at the time the survey was conducted.

Six in ten respondents (58%) in the Post wave recalled seeing or hearing some kind information or advertising about the introduction of 20mph speed limits – broadly consistent with the Pre wave (53%). The key information source about the scheme was 20mph speed signs/road markings (seen by around two thirds of those who had seen information or publicity about the scheme); lamp post banners were mentioned by around a third, and a fifth had read information in newspapers.

There was broad support for the introduction of 20mph speed limits, in both the Pre and Post waves. Before implementation of the speed limits, a total of 58% supported it overall (a fifth said they strongly supported it). In the Post wave, this had increased to a total of 64% supporting the scheme (with 24% strongly supporting it). There has also been a drop in the proportion opposing it, either strongly (from 8% to 5%), or opposing it overall (from 17% to 12%). Strength of support tended to reflect levels of concern about traffic speeds; for example, those with children in the household tended to be most concerned about safety and were also more supportive of the speed limits.

1.3.5 Perceived impacts of the 20mph scheme

When asked to predict the impacts of the scheme on various aspects of their local neighbourhood, respondents in the Pre wave tended to anticipate that things would remain largely the same. For example, most people predicted that there would be the same amount of noise, congestion, through traffic and aggressive driving, as well as the amount of cycling and walking in the area, following the implementation of 20mph speed limits.

Key areas where higher proportions of respondents predicted an improvement were for conditions for walking and cycling (31% thought this would be better) and the standard / safety of driving in the area (30%). In addition, around a fifth of respondents expected that ease of driving would be better (21%), there would be greater opportunities to stop and chat on the street (20%) and that the community atmosphere would improve (17%).

However, some concerns were also expressed, with the most commonly mentioned issues being a predicted increase in aggressive driving (predicted by 37%, excluding those who said 'don't know') and congestion (36% excluding DK). Around a fifth (22%) also expected air quality to get worse as a result of the scheme.

Post wave results show that respondents were more likely to report no change compared to the proportion who had predicted change before the introduction of the 20mph limits. This applies to both positive and negative aspects, i.e. concerns about aggressive driving and congestion had not been realised, but the expected benefits in relation community benefits etc had not yet been observed. However, it is worth noting that around one in ten respondents did report more walking (11%) and cycling (13%) following the implementation of the scheme.

1.3.6 Sub-group differences

Throughout the analysis, key demographic trends were evident in responses to the 20mph scheme. For example:

- In general, women were more concerned about traffic speeds and more supportive of the introduction of speed limits, while men were less concerned and more likely to oppose the limits (although the majority of men did support the scheme).
- Respondents who drive were also less likely than non-drivers to support the speed limits (although the majority of drivers did support the 20mph scheme). These findings may well be linked, since men in the sample were more likely than women to be drivers.
- The oldest respondents tended to have most concerns about safety and traffic speeds. The youngest age group were least likely to support the 20mph scheme (although they were more likely to say they did not know, rather than express opposition).
- Although there was no difference between socio-economic groups in terms of overall support / opposition to the scheme, ABC1s were more likely than C2DEs to report that the speed limits have had a positive impact on quality of life in their area.

1.4 Conclusions

The research has found high levels of support for the introduction of 20mph speed limits across Edinburgh. However, evidence of impact on behaviours is less conclusive: many of the metrics measured during the Pre wave did not change significantly in the Post wave and the majority of respondents stated that they saw 'no difference' or that key potential impacts (such as reduction of congestion, more walking, better air quality, etc.) remained unchanged since implementation. Nevertheless, comparing the research data between the Pre and Post waves shows some possible outcomes of the introduction of the 20mph speed limits.

Although the overall proportions of people using active travel options has not increased, a higher proportion of those who do walk and cycle in the Post wave reported the amount of walking/cycling that they do had increased in the last year. In addition, more respondents in the Post wave said they thought traffic speeds were 'very safe' for cycling. Further, around one in ten respondents in the Post wave reported that there had been an increase in walking and/or cycling in their area since the introduction of the new speed limits.

The perceptions of parents and people generally that the city's streets are safe for children have also improved. For example, the proportion of parents agreeing that they worry about the danger to their children from traffic in their street has decreased, and there have been decreases in the proportions of people who consider traffic speeds to be unsafe for children walking or cycling.

It is also important to note that over a third of respondents in the Post wave stated that the introduction of the 20mph speed limits had had a positive impact on the quality of life in their neighbourhood.

In conclusion, although early indications of the impact of the 20mph speed restrictions on behaviours are limited, most respondents feel positively towards the scheme. Behaviour change is a long term process and is influenced by a myriad of factors. It may therefore be some years before conclusive changes in travel behaviour and the quality of life in neighbourhoods is measurable.

2 Background and objectives

2.1 Background

The City of Edinburgh Council (CEC) has a long standing policy of introducing 20mph speed limits, initially focussed in residential areas and around schools. Following a consultation exercise and a successful pilot in the South Edinburgh area, the Council's Transport and Environment Committee approved proposals for the network of 20mph roads for the city. The key features of the network are:

- Residential roads, shopping streets and most of the city centre included as 20mph
- The retention of a coherent and connected network of 30mph and 40mph roads in outer parts of the city.

The 20mph speed limits were rolled out across six zones in four phases of construction across the city. The speed limits were introduced in the city centre and rural west (Zone 1) on the 31st of July 2016, and were then been rolled out in stages across the other zones between 28th February 2017 and 5th March 2018. An overall monitoring programme was established to assess the following areas:

- Traffic speed and volume
- Road casualties
- Public opinion, behaviours and attitudes
- Pedestrian, cycling and vehicle levels
- Vehicle journey times
- Emissions.

Tracking public opinion, behaviours and attitudes is a key strand of this monitoring programme and Progressive was commissioned by CEC in December 2015 to conduct a programme of research into public opinions of the scheme.

2.2 Aims and objectives

The aim of the research was to assess changes in perceptions, attitudes and behaviours in relation to:

- Impact on vehicle speeds and traffic volumes
- Road safety in the local area
- Walking and cycling activities
- Community spirit and quality of life
- Awareness of 20mph speed limits.

The research programme was designed to monitor public opinion, behaviours and attitudes before and after the introduction of the 20mph speed network in Edinburgh. Findings from the Pre-Stage research, and interim findings from Zones 1~5 have been provided to the Council in previous reports¹.

¹ Pre-Stage Report June 16, Interim Report Zone 1 November 16, Interim Report Zones 2 & 3 June 17, Interim Report Zones 1~5 June 18



This report provides the results of the Post-Stage survey, conducted across all six zones in Spring 2019, three years after the Pre-Stage survey and 1 to 2.5 years after implementation of the speed limits depending on the zone.

3 Method and sample

3.1 Introduction

In total, 1,215 interviews were conducted with Edinburgh residents during February and March 2016 (Pre-Stage), and 1,204 in February and March 2019 (Post-Stage). The survey was conducted in-home by Progressive's interviewers using Computer-Aided Personal Interviewing (CAPI). A copy of the Post-Stage questionnaire is included in Appendix 1.

3.2 Sampling

The sample was designed to ensure representation across the six implementation zones for the 20mph scheme. Interviewers were given a random selection of postcode areas to work in and were asked to ensure interviews were conducted across different localities in each zone. Quotas were also set for age, gender and working status to ensure a broadly representative sample was achieved. The same sampling approach was used in both waves, to ensure consistency in the Pre and Post surveys.

The overall sample sizes for the two waves provide datasets with the following margins of error, calculated at the 95% confidence level (the market research industry standard)²:

- Pre (sample of 1,215): margin of error between $\pm 0.56\%$ and $\pm 2.81\%$
- Post (sample of 1,204): margin of error between $\pm 0.56\%$ and $\pm 2.82\%$

The final sample profiles are outlined in Tables 1a and 1b overleaf.

There were some slight differences between the Pre and Post samples on variables such as car ownership, street type and children in the household (where no quotas were set). Post-Stage data has been weighted to the Pre-Stage profile in relation to street type (i.e. whether respondents live on a busy main road or a quiet residential street). This ensures that the data is comparable and any changes in results are not due to differences in responses between residents of quieter or busier streets. The sample tables overleaf show both the weighted and unweighted Post figures for information.

3.3 Analysis and reporting

Throughout this report, any reported differences (either between Pre and Post results, or between sub-groups of the sample) are statistically significant at the 95% level. Sub-group analysis focuses on the Post results (the full Pre-Stage report contains sub-group analysis for the earlier wave).

Standard notation is used in tables with '*' used to indicate results of less than 1% and '-' used to indicate no respondents gave a particular answer. For ease of reading the results, '1%' and '2%' notations have been left off some of the charts.

Where percentages in charts and tables do not total the figures quoted in the text, this is due to rounding.

² See the technical appendix for explanations of margins of error

Table 1a: Sample profile: demographics

	PRE		POST - unweighted		POST – weighted	
	No.	%	No.	%	No.	%
Gender						
Male	576	47%	586	49%	588	49%
Female	639	53%	618	51%	616	51%
Age						
16-24	175	14%	183	15%	181	15%
25-34	224	18%	193	16%	187	16%
35-44	204	17%	227	19%	227	19%
45-54	209	17%	221	18%	224	19%
55-64	160	13%	145	12%	148	12%
65-74	151	12%	128	11%	129	11%
75-84	71	6%	87	7%	88	7%
85+	19	2%	20	2%	21	2%
Prefer not to say	2	*	-	-	-	-
Ethnic group						
White	1,143	94%	1,144	95%	1145	95%
Mixed or multiple ethnic background	3	*	2	*	2	*
Asian, Asian Scottish, or Asian British	47	4%	35	3%	33	3%
African	8	1%	6	*	6	*
Caribbean or black	2	*	3	*	3	*
Other ethnic group	6	*	3	*	3	*
Prefer not to say	6	*	11	1%	11	1%
Socio-economic group						
AB	193	16%	192	16%	189	16%
C1	379	31%	362	30%	363	30%
C2	216	18%	224	19%	224	19%
D	170	14%	180	15%	181	15%
E	214	18%	161	13%	164	14%
Prefer not to say	43	4%	85	7%	82	7%
Working status						
Working FT (30+hrs)	471	39%	484	40%	483	40%
Working PT (9-29 hrs)	141	12%	146	12%	146	12%
Self employed	60	5%	82	7%	84	7%
Unemployed	55	5%	60	5%	60	5%
Not working – retired	243	20%	200	17%	200	17%
Not working – looking after house / children	67	6%	38	3%	40	3%
Not working – disabled	45	4%	38	3%	38	3%
Not working – carer	11	1%	20	2%	21	2%
Student	122	10%	130	11%	126	11%
Other	-	-	6	*	6	*
Disability						
Yes	137	11%	153	13%	154	13%
No	1,074	88%	1031	86%	1030	86%
Prefer not to say	4	*	20	2%	20	2%
Children in the household						
Yes	296	24%	333	28%	339	28%
No	919	76%	871	72%	865	72%
Base	1,215	100%	1,204	100%	1,204	100%

Table 1b: Sample profile: area profile and car access

Zone	PRE		POST - unweighted		POST – weighted	
	No.	%	No.	%	No.	%
1: City Centre and Rural West	201	17%	200	17%	201	17%
2: North	200	16%	201	17%	189	16%
3: South Central / East	201	17%	200	17%	198	16%
4: North West	201	17%	202	17%	201	17%
5: West	211	17%	200	17%	205	17%
6: South	201	17%	201	17%	211	18%
Street type	No.	%	No.	%	No.	%
Quiet residential	1002	82%	907	75%	987	82%
Busy / main road	213	18%	297	25%	217	18%
Area	No.	%	No.	%	No.	%
Southside, Newington	50	4%	50	4%	38	3%
Currie, Balerno	51	4%	50	4%	54	5%
Kirkliston	50	4%	50	4%	54	5%
South Queensferry	50	4%	50	4%	54	5%
Dean Village, Comely Bank	67	6%	68	6%	65	5%
Leith, Newhaven	67	6%	65	5%	71	6%
Restalrig, Craigentenny	66	5%	68	6%	54	4%
Marchmont, Grange	51	4%	50	4%	52	4%
Bruntsfield, Morningside, Fairmilehead	50	4%	49	4%	52	4%
Gorgie, Stenhouse	50	4%	50	4%	41	3%
Portobello, Duddingston	50	4%	51	4%	53	4%
Barnton, Cramond – Queensferry Road	50	4%	52	4%	43	4%
Muirhouse, Pilton	45	4%	50	4%	53	4%
Davidsons Mains	50	4%	50	4%	51	4%
Barnton, Cramond	56	5%	50	4%	54	5%
Gorgie, Stenhouse	50	4%	50	4%	50	4%
Corstorphine, Gyle	59	5%	50	4%	53	4%
Maybury, Drum Brae	52	4%	50	4%	54	5%
Kings Knowe, Slateford	50	4%	50	4%	47	4%
Morningside	50	4%	50	4%	52	4%
Colinton, Oxgangs	50	4%	50	4%	54	4%
Liberton	51	4%	51	4%	56	5%
Gilmerton, Moredun	50	4%	50	4%	49	4%
Household access to a car	No.	%	No.	%	No.	%
Yes	721	59%	783	65%	792	66%
No	494	41%	421	35%	412	34%
Whether respondent drives a car	No.	%	No.	%	No.	%
Yes	665	55%	677	56%	686	57%
No	550	45%	527	44%	518	43%
Base	1,215	100%	1,204	100%	1,204	100%

It is worth noting some trends in the profile data which may influence interpretation of sub-group analysis. For example:

- Older respondents tended to be from lower socio-economic groups (e.g. 63% of 65+ were from socio-economic groups C2DE compared to a sample average of 47%).

- Women were more likely than men to report having children under 16 in the household (34% of women compared to 22% of men).
- Unsurprisingly, the middle age groups were also most likely to have children in the household (48% of 25-44s and 31% of 45-64s, compared to 14% of 16-24s and just 1% of those aged 65+).
- Car access and whether respondents personally drive a car were affected by age, gender, socio-economic group and family situation, for example:
 - Men were more likely than women to live in a household with access to a car (men 70%, women 61%) and to personally drive a car (men 64%, women 50%).
 - The middle age groups were most likely to have access to a car (71% of 25-44s and 75% of 45-64s, compared to a sample average of 66%), or to drive (66%/69% v sample average 57%) – and the youngest were the least likely to drive (24% of 16-24s).
 - Respondents from higher socio-economic groups were more likely than lower socio-economic groups to have access to a car (ABC1 75%, C2DE 58%) and more likely to personally drive a car (ABC1 67%, C2DE 48%).
 - Respondents with children in the household were more likely than those without to have a car (with children 83%, without children 59%) and more likely to be drivers (with children 73%, without children 51%).
- Since quotas were set to reflect local area profiles, as well as for Edinburgh as a whole, there was some variation in the profile across 20mph implementation zones. For example:
 - Those in Zone 3 (South Central / East) were more likely to be in the youngest age group (24% of respondents in Zone 3 were aged 16-24, compared to a sample average of 15%). This reflects the high student population in these areas: 23% of respondents in Zone 3 were students, while the proportion of students in the sample as a whole was 11%.
 - Zone 4 (North West) and Zone 6 (South) had the highest proportion of retired respondents (22% and 21%, compared to a sample average of 17%).
 - Respondents in Zone 2 (North) were least likely to have children living in the household (20%, compared to a sample average of 28%).
 - Car ownership was highest in Zone 1 (City Centre and Rural West) at 76%, and Zone 5 (West) and Zone 6 (South) at 71%. It was lowest in Zone 3 (South Central / East) (50%).

4 Research findings

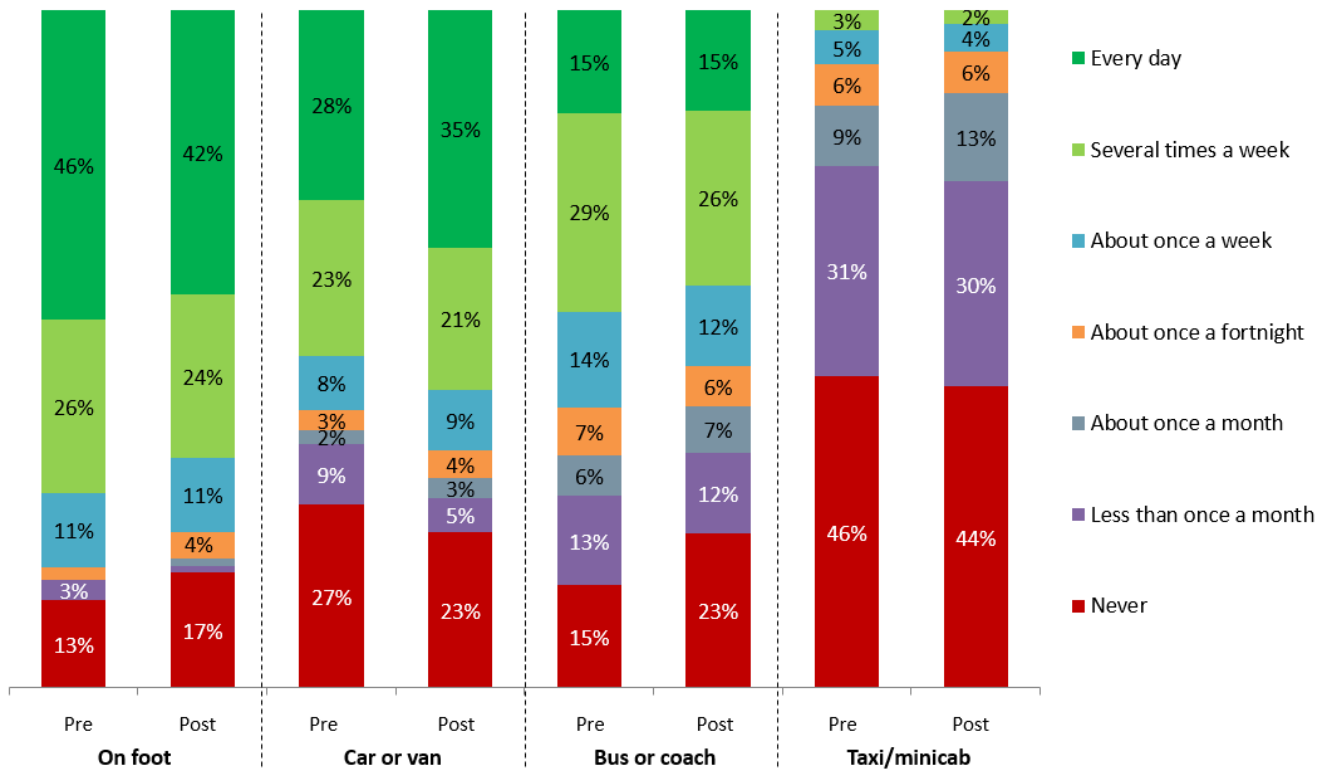
4.1 Current travel behaviour

4.1.1 Frequency of using different modes of transport

Respondents were asked how often they use a variety of modes of transport. Figure 1a shows results for the most frequently used modes: travelling on foot was most commonly mentioned, followed by car or van and then bus or coach – in the Post wave, 66% reported walking daily or several times a week; 55% travel by car and 40% use the bus this frequently.

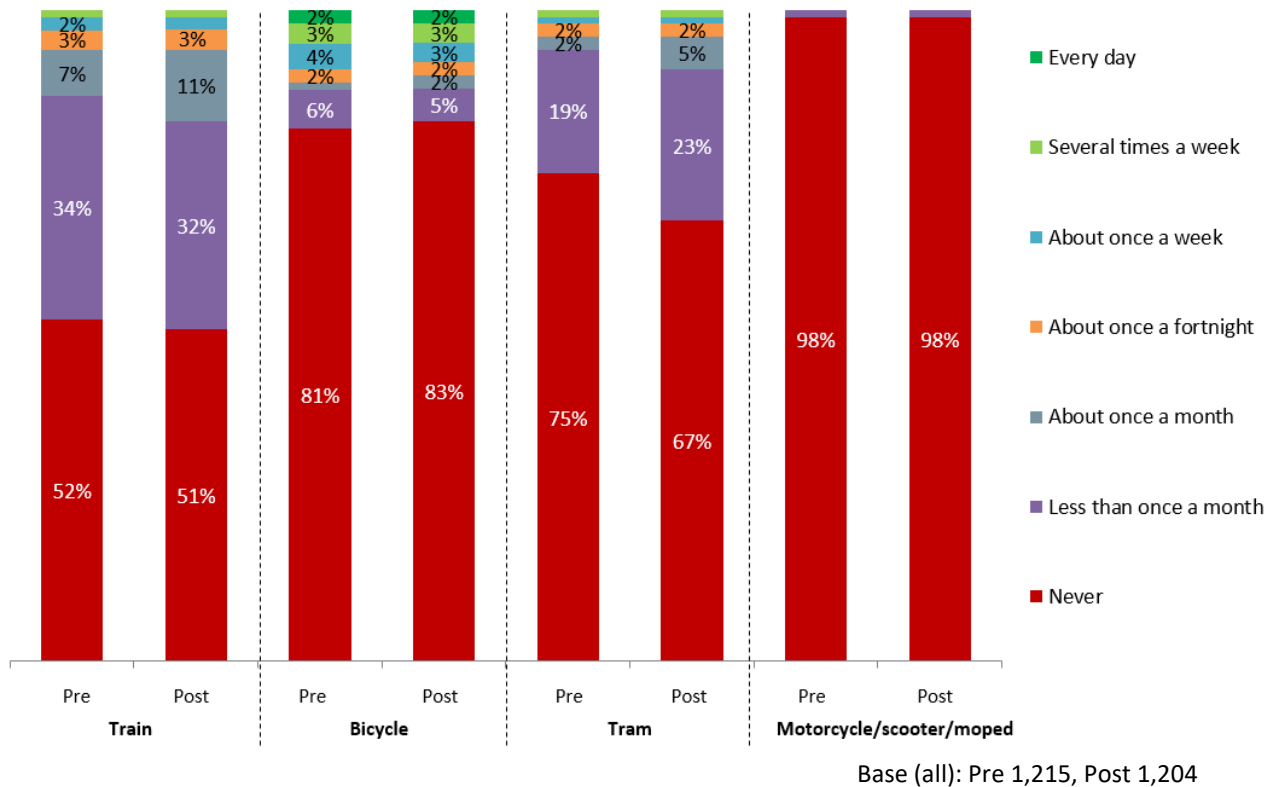
All other modes of transport were used much less frequently (see Figure 1b). In terms of other active travel choices, just under a fifth (17%) of respondents said that they ever cycle, although only a small number do so frequently – 5% said they do this at least several times a week in the Post wave.

Figure 1a: Frequency of using different modes of transport



Base (all): Pre 1,215, Post 1,204

Figure 1b: Frequency of using different modes of transport



Data relating to each of the three main modes of transport is provided in the following sections.

4.1.2 Travel on foot

Walking was the most frequently used mode of transport among survey respondents, in both waves. Table 2 summarises data on frequency of walking, with four in ten (42%) saying they travel on foot every day and 24% reporting they do this several times a week in the Post wave. However, there has been a small decrease in walking levels since the Pre wave, with slightly fewer saying they travel by foot frequently, and more saying they never do this.

Table 2: Frequency of travel on foot

Frequency of travelling on foot	Pre		Post	
Every day	46%	Frequent (71%)	42%	Frequent (66%)
Several times a week	26%		24%	
About once a week	11%	Regular (13%)	11%	Regular (14%)
About once a fortnight	2%		4%	
About once a month	*	Occasional (3%)	1%	Occasional (2%)
Less than once a month	3%		1%	
Never	13%	Never (13%)	17%	Never (17%)
Base (all)	1,215		1,204	

Respondents most likely to travel on foot frequently were women (69% said they walk frequently, i.e. daily or several times a week, compared to 63% of men), the younger age groups (83% of 16-24s compared to 60%-65% among other age groups) and higher socio-economic groups (76% of ABC1s v 57% of C2DEs). This may reflect differences in health profile between the socio-economic groups, with

C2DEs being most likely to report having a health condition: 19% of C2DEs said they find it difficult to get around because of a permanent disability or medical condition, compared to 6% of ABC1s.

Respondents living in Zone 3 (South Central/East) were the most likely to say they travel on foot frequently: 77% said this, compared to an average of 66% across the sample as a whole. Those in Zone 4 (North West) were least likely to travel on foot frequently (49%).

4.1.3 Reasons for travelling on foot

The main reasons identified for travelling on foot are presented in Table 3. The most common reason given for walking was the health benefits, mentioned by around half (48%) of those who travel on foot at least monthly in the Post wave. Convenience was mentioned by a third (34%) and habit by 17%. Findings were broadly consistent with the Pre wave, although fewer mentioned health benefits in the Post wave, and more mentioned environmental benefits, habit and difficulty/cost of parking.

Table 3: Reasons for travelling on foot

Reasons for travelling on foot	Pre	Post
Health benefits	53%	48%
Convenience	34%	34%
Habit/always done	12%	17%
No alternative	16%	15%
Cost	13%	12%
Less stressful	11%	13%
Environmental benefits	6%	10%
Journey time	8%	8%
Reliability	3%	4%
Comfort	2%	4%
Difficulty/cost of parking	1%	4%
Safety	*	3%
Other	3%	-
Base (all using this mode at least once a month)	1,028	986

Respondents were also asked, for each of the modes they use, whether the amount they travel has increased, decreased, or stayed the same over the last year. For those walking, the majority in the Post said they walk the same amount compared to last year (79%) while 17% said the amount they walk has increased and 4% said it has decreased. More respondents in the Post wave said the amount they walk had increased in the last year than in the Pre wave (17% v 10%).

4.1.4 Travel by car

Travelling by car or van was also common among respondents, with 35% using the car every day in the Post wave, and 21% doing so several times a week (see Table 4). Although the proportion who were 'frequent' drivers was consistent across both waves, more now said they drive every day compared to the Pre wave.

Table 4: Frequency of travel by car

Frequency of travelling by car or van	Pre		Post	
Every day	28%	Frequent (52%)	35%	Frequent (55%)
Several times a week	23%		21%	
About once a week	8%	Regular (10%)	9%	Regular (13%)
About once a fortnight	3%		4%	
About once a month	2%	Occasional (11%)	3%	Occasional (8%)
Less than once a month	9%		5%	
Never	27%	Never (27%)	23%	Never (23%)
Base (all)	1,215		1,204	

The sub-groups of the sample most likely to travel by car more than once a week were ABC1s (60% v 52% of C2DEs), men (60% of men v 51% of women) and those with children in the household (74% v 48% of those without children). The youngest respondents were least likely to travel by car (37% never do this, v 23% sample average). These findings match the patterns in relation to car access and whether respondents personally drive noted in the sample profile section of this report.

Car use tended to be highest in Zone 1 (City Centre and Rural West), where 67% travelled by car frequently, Zone 6 (South) (61%) and Zone 5 (West) (60%). Those living in Zone 3 (South Central / East) (43%) and Zone 2 (North) (45%) were least likely to be frequent travellers by car.

4.1.5 Reasons for travelling by car

The main reason identified for travelling by car was convenience, mentioned by 68% of those who travel by car, in both waves (see Table 5). Reliability (24%), journey time (23%) and comfort (21%) were also common reasons for using this mode of transport in the Post wave. Some changes were seen since the Pre wave: more now mentioned reliability, safety, and having no alternative, while fewer mentioned needing the car at their destination.

Table 5: Reasons for travelling by car

Reasons for travelling by car or van	Pre	Post
Convenience	68%	68%
Reliability	15%	24%
Journey time	25%	23%
Comfort	23%	21%
Need car at destination	16%	12%
No alternative	1%	12%
Safety	5%	10%
Habit/always done	9%	8%
Less stressful	8%	8%
Health benefits	3%	2%
Cost	3%	2%
Environmental benefits	1%	1%
Other	-	*
Base (all using this mode at least once a month)	783	859

For respondents who travel by car at least once a month, the majority in the Post wave (83%) have used this means of travel the same amount over the last year, while 8% reported an increase and 9% reported a decrease. Importantly, more respondents in the Post wave said the amount they travel by car had decreased in the last year than in the Pre wave (9% v 5%).

4.1.6. Travel by bus

Bus use was relatively common across the Post wave sample, with 15% using the bus daily and around a quarter (26%) travelling by bus several times a week (see Table 6). The only statistically significant change in frequency of bus use since the Pre wave was that a higher proportion now said they never use the bus (23% v 15%).

Table 6: Frequency of travel by bus

Frequency of travelling by bus or coach	Pre		Post	
Every day	15%	Frequent (45%)	15%	Frequent (40%)
Several times a week	29%		26%	
About once a week	14%	Regular (21%)	12%	Regular (18%)
About once a fortnight	7%		6%	
About once a month	6%	Occasional (19%)	7%	Occasional (18%)
Less than once a month	13%		12%	
Never	15%	Never (15%)	23%	Never (23%)
Base (all)	1,215		1,204	

There were some sub-group differences in frequency of bus use. Those most likely to be frequent users (several times a week or daily use) included women (45% v 35% of men), the youngest (65% of 16-24s) followed by the oldest (45% of those aged 65+) – both of whom were more likely to do this than the middle age groups (both 33%). Those without children in the household (45%) were also more likely than those with children (28%) to be frequent bus users. Bus use was most frequent in Zone 2 (North) (51% travelling by bus frequently), and lowest in Zone 1 (City Centre and Rural West) (31%).

4.1.7 Reasons for travelling by bus

The main reason identified for travelling by bus was convenience, mentioned by almost half of bus users (46%) in the Post wave. Having no alternative was mentioned by 28%, and cost was also commonly mentioned (21%), as was journey time and difficult/cost of parking (both 19%) – see Table 7. More people in the Post wave mentioned having no alternative or habit compared to the Pre wave.

Table 7: Reasons for travelling by bus

Reasons for travelling by bus or coach	Pre	Post
Convenience	48%	46%
No alternative	12%	28%
Cost	25%	21%
Journey time	21%	19%
Difficulty/cost of parking	19%	19%
Reliability	15%	11%
Less stressful	7%	7%
Habit/always done	3%	5%
Comfort	4%	5%
Safety	3%	4%
Environmental benefits	2%	4%
Health benefits	1%	2%
Other	-	1%
Base (all using this mode at least once a month)	873	780

Again, most of those who ever travel by bus reported that they have used this mode of transport the same amount over the last year (78%), while 15% reported an increase and 7% said they travel by bus less compared to last year. Respondents in the Post wave were more likely than those in the Pre wave to say the amount they travel by bus had increased in the last year (15% v 7%).

4.1.8 Cycling

While not one of the main modes of transport used by respondents, cycling was one of the areas of focus of the project because of the aim to increase active travel (cycling and walking) after the implementation of the 20mph speed limits.

As noted earlier, 83% said they never cycle in the Post wave, and this is consistent with the Pre wave (81%) – so there is no evidence of an increase in the proportion of residents who travel by bike since the speed limits were introduced. However, among those who **do** cycle, there has been a slight increase in the proportion saying the amount they cycle has increased in the last year (from 11% to 17% in the Post wave – this difference is statistically significant at the 90% level rather than 95% level).

4.2 Children’s travel and attitudes towards child safety

4.2.1 Children in the household

Across the sample as a whole in the Post wave, around three in ten (28%) of respondents reported there were children in the household and seven in ten (72%) said there were not. There were slightly more respondents in the Post wave who had children in the household compared to the Pre wave (28% v 24%). It was most common for respondents to report there was just one child in the household, and very few households overall had more than two children under the age of 16 (see Table 8). As noted earlier in this report, women were more likely to report having children in the household than men, as were the middle two age groups.

Table 8: Children (16 or under) in the household

Number of children in the household	Pre	Post
No children in the household	76%	72%
One	14%	17%
Two	8%	9%
Three	1%	2%
Four	*	*
Base (all)	1,215	1,204

A set of questions was asked about the children in the household, how they travel to school and the level of supervision they have. All of these questions were asked in relation to **each child**, rather than each respondent answering for all children in their household, since the age of the child was likely to have an impact on the responses to questions about how they are allowed to travel in the local area. This analysis is therefore based on the **total sample of children** living in the households with at least one child (a total of 441 children in the Pre wave, and 493 children in the Post wave).

As shown in Table 9, the children covered a good spread of ages and have been split into categories for analysis purposes based on broad age ranges for pre-school (0-3 years), lower primary (4-7 years), upper primary (8-11 years) and secondary school (12-16 years) aged children.

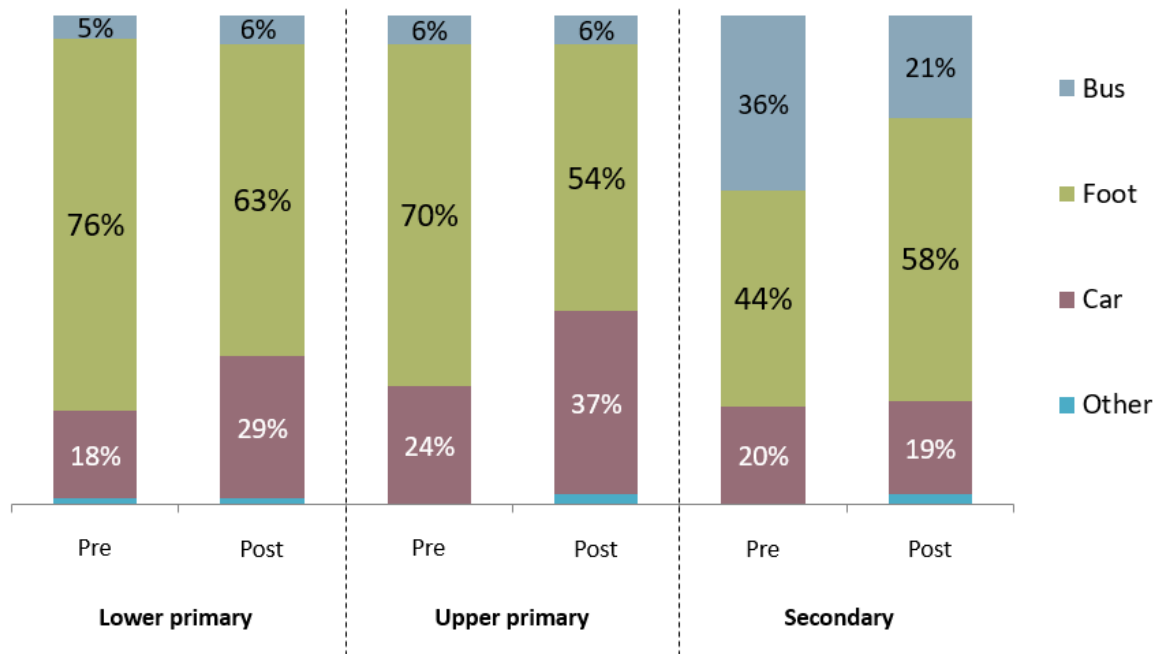
Table 9: Ages of children

Ages of children	Pre	School stage – Pre	Post	School stage – Post
0	3%	Pre-school (34%)	2%	Pre-school (24%)
1	11%		7%	
2	10%		6%	
3	10%		8%	
4	4%	Lower primary (22%)	4%	Lower primary (24%)
5	7%		6%	
6	5%		6%	
7	6%		7%	
8	6%	Upper primary (20%)	5%	Upper primary (25%)
9	6%		7%	
10	4%		8%	
11	4%		6%	
12	5%	Secondary (24%)	7%	Secondary (27%)
13	4%		3%	
14	7%		8%	
15	7%		7%	
16	1%		1%	
Base (all children)		441		493

4.2.2 Children’s travel to school

Respondents were asked how each child travels to school. As shown in Figure 2, the results varied slightly depending on the stage the child was at. Respondents in the Post wave reported that most children walk to school (63% of lower primary, 54% of upper primary and 58% of secondary aged children). Bus use was highest among secondary school children, although it had fallen in the Post wave (from 36% to 21%). The proportions travelling to school by car were relatively consistent across age groups, although had increased among primary school children compared to the Pre wave, with 37% of upper primary and 29% of lower primary pupils now travelling to school by car.

Figure 2: Children’s travel to school



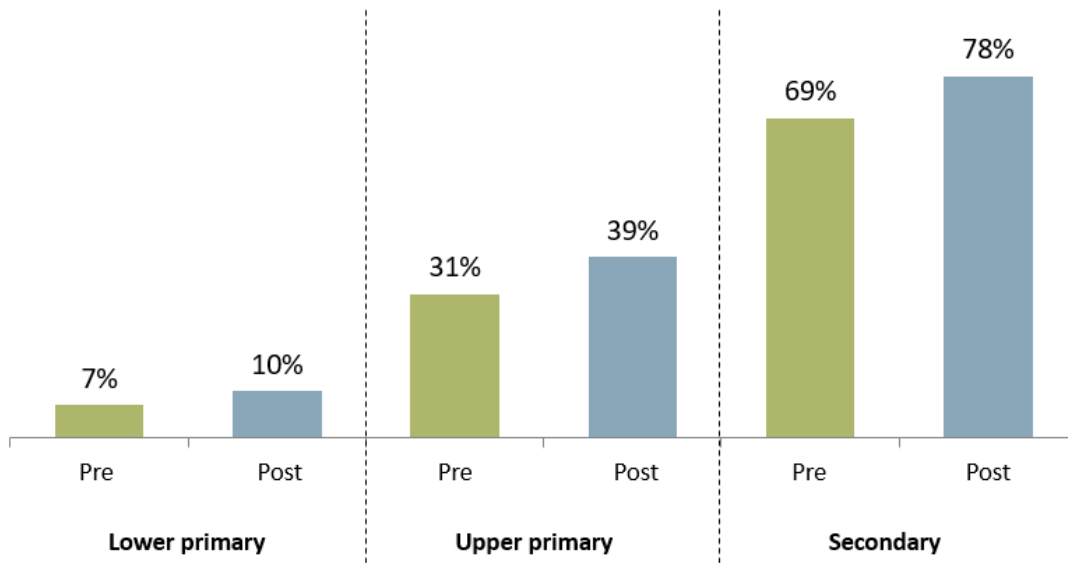
Base (all children at school): Pre: Lower primary 85, Upper primary 90, Secondary 105
 Post: Lower primary 110, Upper primary 125, Secondary 132

There were no differences in responses to this question by age, gender or socio-economic group: the age of the child appears to be the main factor influencing travel to school. There were also differences depending on where respondents lived, with 36% of children in Zone 2 (North) travelling to school by car compared to 22% across the whole sample. Children in Zone 5 (West), meanwhile, were most likely to walk to school (56%, average 45%).

For each child at school, respondents were asked whether they make the journey to school with or without adult supervision. Unsurprisingly, the proportion making the journey unsupervised increased with the age of the child, with 10% of lower primary aged children travelling unsupervised compared to 39% of upper primary and 78% of secondary (see Figure 3). There had not been any statistically significant change in responses for any of the age groups between the Pre and Post waves.

The overall figures include those travelling by car where adult supervision is required; data was therefore also examined for children travelling on foot only. A similar pattern was observed, with the proportion walking to school unsupervised increasing from around one in ten lower primary school children (8% Pre, 13% Post), to between four and six in ten upper primary school children (44% Pre, 60% Post) and the vast majority of secondary school aged children (96% Pre, 97% Post). These findings were consistent between waves.

Figure 3: Children’s travel to school without adult supervision

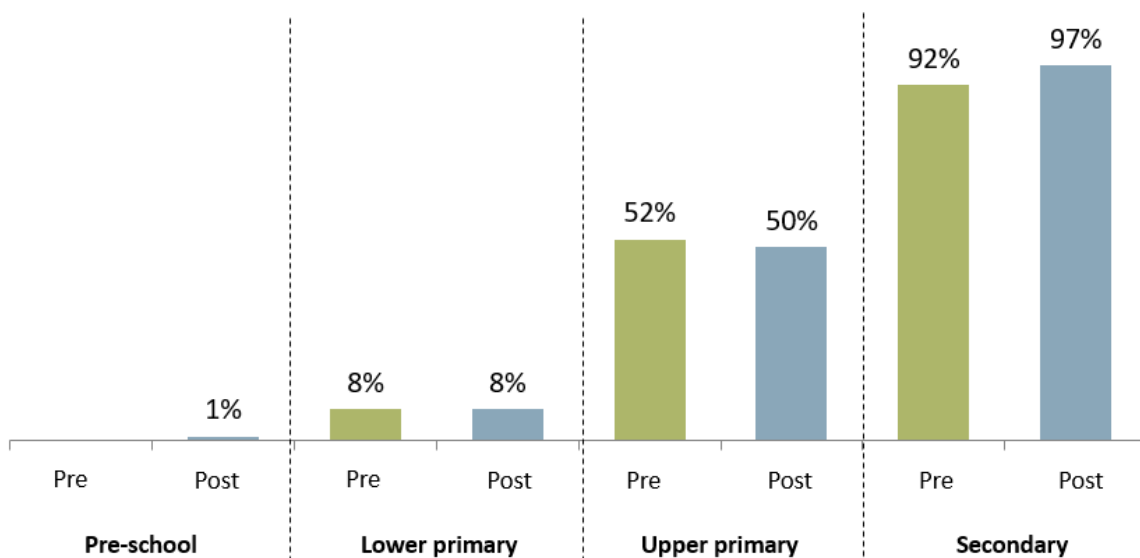


Base (all children at school): Pre: Lower primary 85, Upper primary 90, Secondary 105
 Post: Lower primary 110, Upper primary 125, Secondary 132

4.2.3 Children’s other trips without adult supervision

Respondents were also asked whether they allow each child to make any other local trips that involve crossing a road without adult supervision. Results by age of child are presented in Figure 4. As shown here, a similar pattern was observed with the vast majority of secondary aged children being allowed to make unsupervised local trips (92% Pre, 97% Post), compared to around half of those in upper primary and 8% of those in lower primary. Again these findings were very consistent between the Pre and Post waves.

Figure 4: Children’s other trips without adult supervision

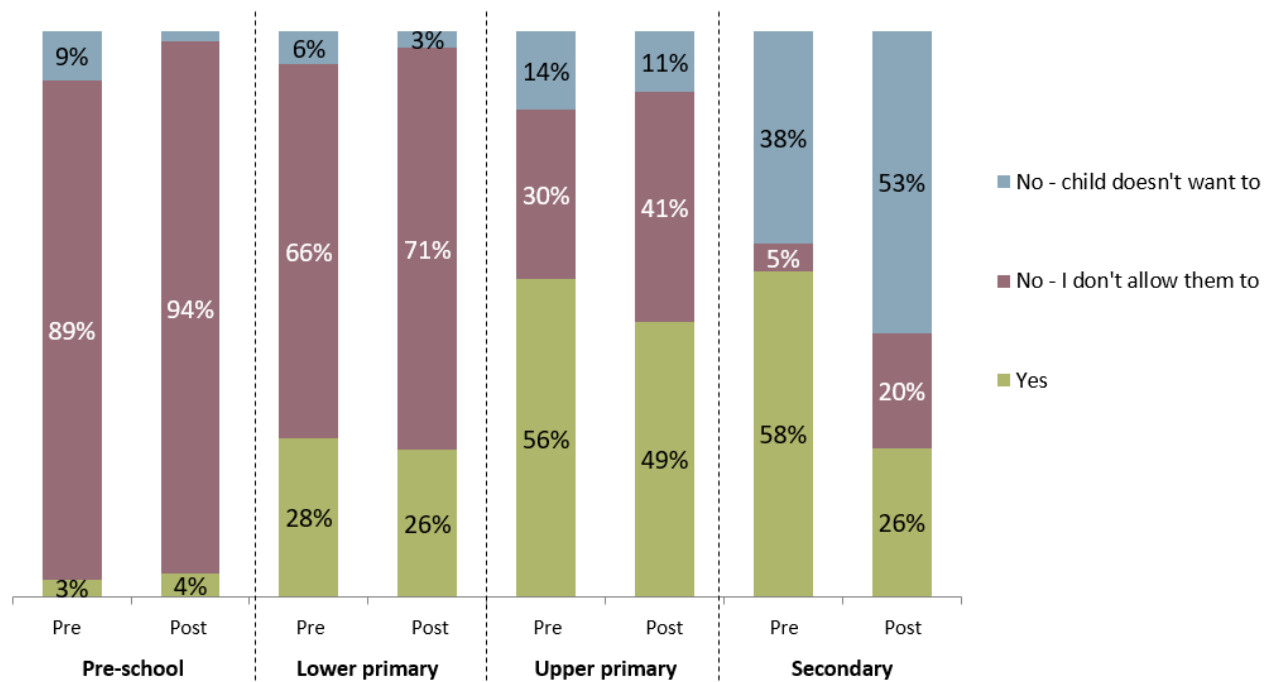


Base (all children): Pre: Pre-school 148, Lower primary 97, Upper primary 90, Secondary 106
 Post: Pre-school 117, Lower primary 119, Upper primary 125, Secondary 133

4.2.4 Playing in the street

Respondents with children in the household were also asked whether each child ever plays in the street. As shown in Figure 5, pre-school aged children were very unlikely to be allowed to play in the street (94% were not allowed in the Post wave), while half of upper primary (49%) were allowed to do this. The main change between Pre and Post waves was that a higher proportion of secondary school aged children simply did not want to play in the street (53%, compared to 38% in the Pre wave) – although a higher proportion also reported that they did not allow their secondary school aged children to do this (20% compared to 5% in the Pre wave).

Figure 5: Whether children are allowed to play in the street



Base (all children): Pre 441, Post 493

Respondents living on quieter streets were more likely to say their children played in the street than those living on busier roads (29% v 15%).

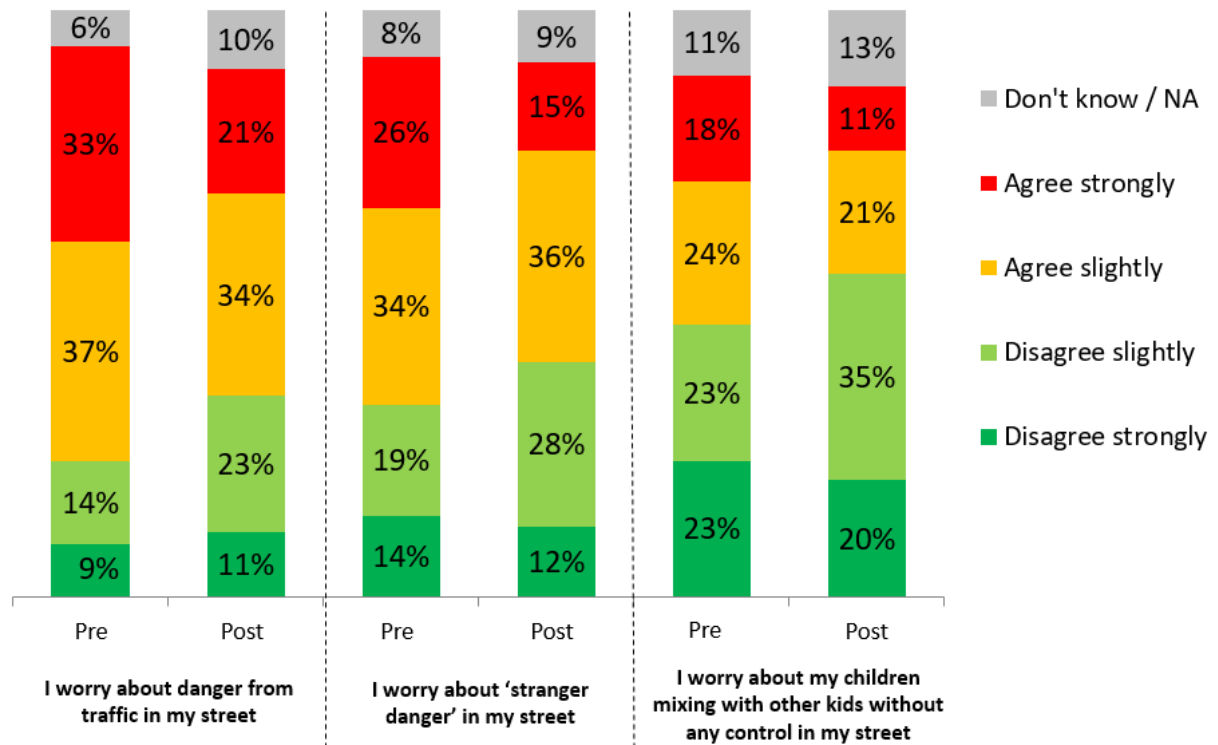
4.2.5 Attitudes to child safety

Those with children in the household were also asked to what extent they agree with three statements about child safety. This was asked as an overall question, not in relation to each specific child; the base for this question is therefore the number of households with children rather than the number of individual children. As shown in Figure 6, there was a certain amount of concern about all three of these things. Parents were most concerned about the danger from traffic on their street (56% agreed), with around half also worried about 'stranger danger' (51% agreed). There was less concern about children playing with other children in the street without supervision; just less than one third of parents agreed that this is a concern.

However, there has been a positive shift since the Pre wave in the proportion agreeing that they worry about danger from traffic in their street (from 70% in the Pre to 56% in the Post wave). This was driven by a decrease in the proportion agreeing strongly, and an increase in the proportion disagreeing slightly.

There has also been a drop in the proportion agreeing they worry about their children mixing with other kids without any control (from 42% to 32%), and in levels of concern about stranger danger (60% Pre, 51% Post).

Figure 6: Attitudes to child safety



Base (all with children in the household): Pre 296, Post 339

There were no demographic sub-group differences in responses to questions about these concerns. However, those living on busier streets were more likely to be worried about danger from traffic in their street (79% compared to 52% of those living on quieter streets).

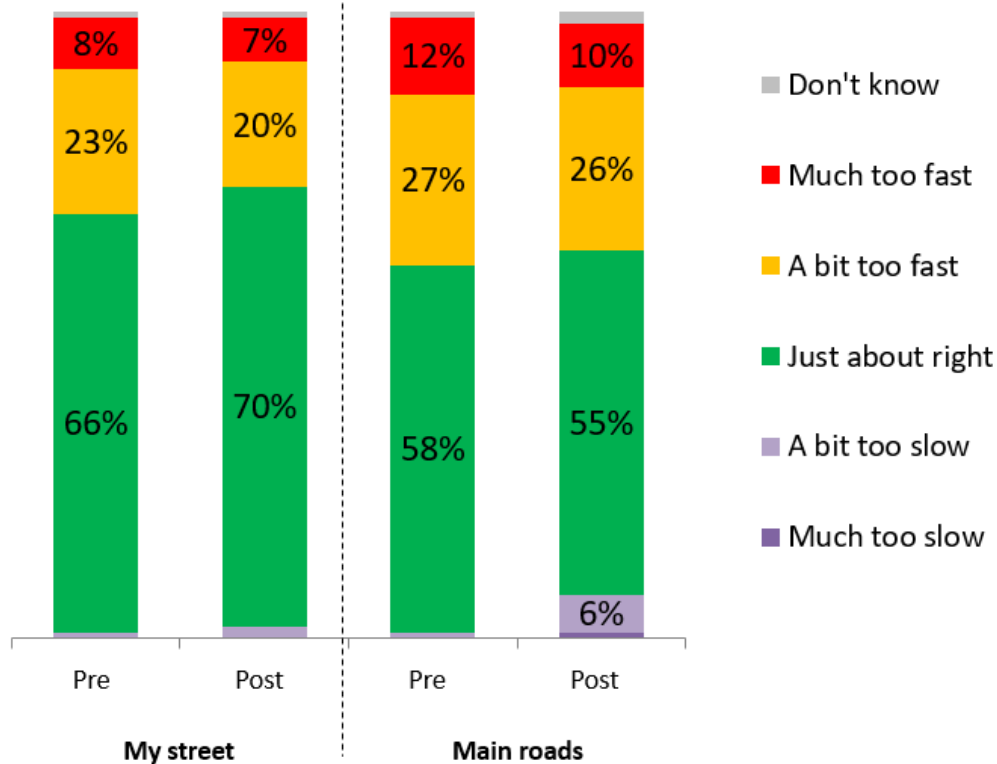
4.3 Perceptions of traffic speeds and safety

4.3.1 Perceptions of traffic speeds on local streets

Respondents were asked what they think about traffic speeds, outside of rush hours, on both their street and main roads in the area. As shown in Figure 7, the majority felt that speeds were about right in the Post wave (70% for their own street and 55% for main roads in the area). However, a substantial minority felt that they were too fast (27% for their own street and 37% for main roads in the Post wave).

In the Post wave, respondents were less likely to say speeds on their own street were too fast (27% v 32% in the Pre wave) – although they were more likely to state that speeds on main roads were too slow (7% compared to 2%).

Figure 7: Perceptions of traffic speeds



Base (all): Pre 1,215, Post 1,204

Women were more likely than men to feel that speeds were too fast on their own street (30% thought traffic speeds were a bit or much too fast, compared to 24% of men). There was also a clear split by age, with younger groups being less likely than the oldest to perceive speeds as being too fast (21% of 16-24s and 24% of 25-44s, compared to 36% of 65+).

The same pattern was observed for perceptions of speed on main roads in their area: women were again most likely to be concerned about this (40% thought speeds were too fast, compared to 32% of men), and the oldest respondents were most likely to report that speeds were too fast on main roads (44% compared to a sample average of 36%).

Respondents with children in the household were more likely to report that speeds were too fast: 34% said this in relation to their own street (compared to 24% among those without children), and 46% for main roads (33% for those with no children in the household).

Those living on quieter streets were more likely to say that speeds were about right on their own street (73% v 55% of those living on busier roads), although there was no difference in relation to perceptions of speed on (other) main streets in the area.

Respondents who drive a car were most likely to report that speeds on main roads were too slow (9% v 3% of those who do not drive).

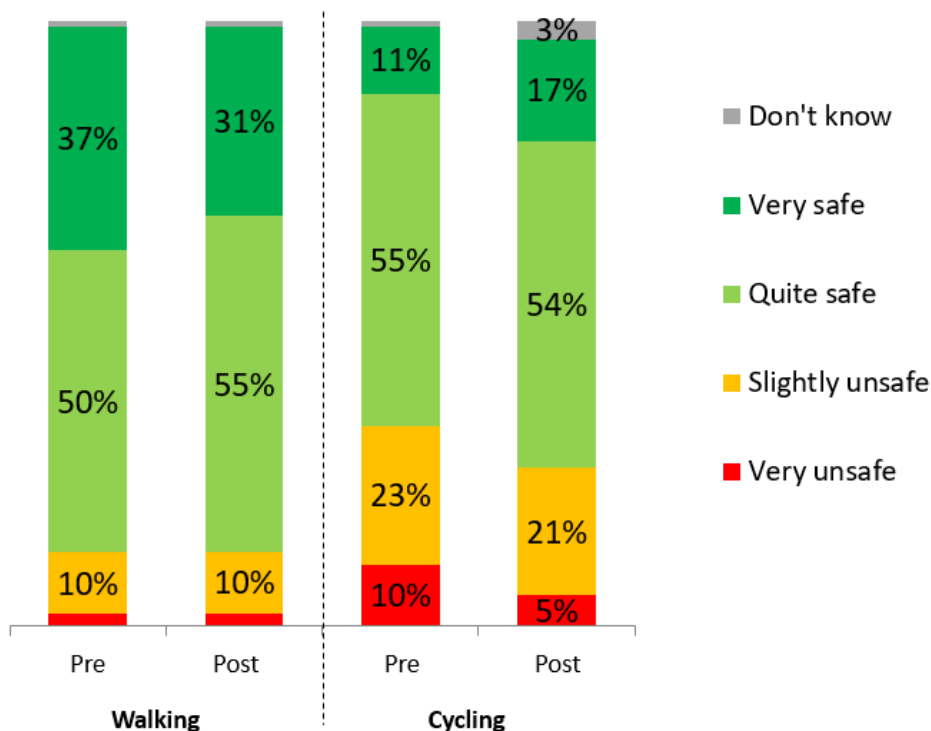
4.3.2 Perceptions of traffic speeds for respondents personally

Despite some concerns about traffic speeds on local streets, respondents generally felt that traffic speeds were safe when cycling or walking in the area themselves, as shown in Figure 8. Most

respondents (87% in the Post wave) felt quite or very safe walking in the area. This is consistent with the Pre wave (87%), although the balance has changed with more people saying ‘quite safe’ and fewer saying ‘very safe’ in the Post wave.

Although the majority of respondents did not cycle, among those who answered this question 71% felt that traffic speeds were quite or very safe for cycling in the area, and 26% felt speeds were very or slightly unsafe for cycling. There was a decrease in the proportion saying cycling was unsafe overall (very or slightly) in the Post wave (26% v 33%) – driven by a drop in the proportion saying ‘very unsafe’ (from 10% to 5%). There was also an increase in the Post wave in the proportion saying they thought speeds were ‘very safe’ (from 11% to 17%).

Figure 8: Perceptions of traffic speeds (for respondents personally)



Base walking (all excluding N/A): Pre 1,181, Post 1,147; Base cycling (all excluding N/A): Pre 398, Post 567

The only sub-group differences were based on age group, with older respondents expressing most concern. For example, 80% of over 65s felt speeds were safe for walking, v 90% of 16-24s or 25-44s; 59% of over 65s said speeds were safe for cycling, v 77% of 16-24s – excluding those saying it was not applicable.

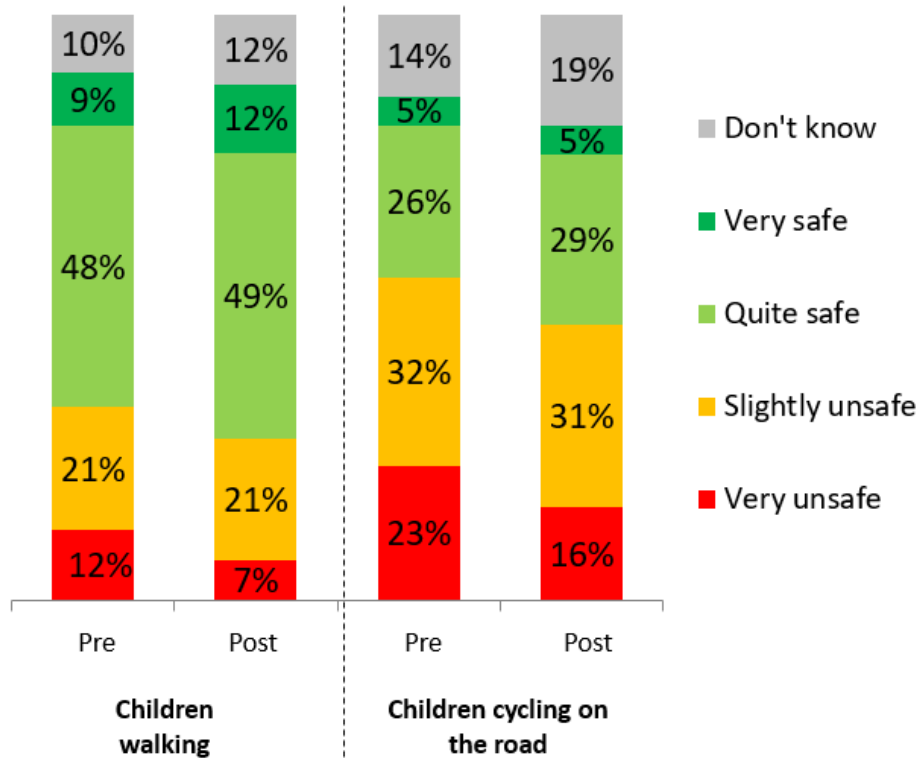
4.3.4 Perceptions of traffic speeds for children in the area

All respondents were asked about the safety of traffic speeds for children walking and cycling in the area, regardless of whether they themselves had children. As shown in Figure 9, although most felt that it was safe for children walking in the area, just under a third expressed concern (32% in the Pre wave, 28% in the Post wave). However, this concern had decreased since the Pre wave (driven by the proportion who said it was ‘very unsafe’ (from 12% to 7%) for children walking.

There was also a substantial amount of concern about safety for children cycling in the area, with 47% reporting traffic speeds to be very or slightly unsafe in relation to children cycling. However, this was

an improvement compared to the Pre wave, when 55% said this – there was also a drop in the proportion saying ‘very unsafe’ (from 23% to 16%).

Figure 9: Perceptions of traffic speeds (for children)



Base (all): Pre 1,215, Post 1,204

Perhaps understandably, those with children in the household were more likely than those without children to think speeds were unsafe for children walking (33% v 26%) or cycling (58% v 43%).

4.4 Awareness and perceptions of the 20mph Scheme

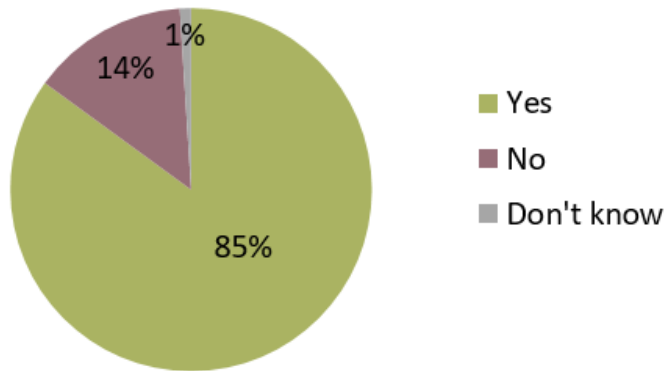
4.4.1 Awareness of the 20mph speed limits

Respondents were given the following information:

“The rollout of 20mph speed limits started in July 2016 and has been implemented in four phases. The speed limits cover shopping areas, residential areas and areas with high levels of pedestrians and cyclists. The new 20mph speed limits have been in place in your area since [DATE INSERTED BY ZONE]”.

They were then asked whether they were aware that 20mph speed limits had been introduced in their area. As shown in Figure 10, most respondents were aware that the 20mph scheme had been introduced in their area – although 14% were not aware of this.

Figure 10: Awareness of the 20mph speed limits (Post wave)



Base (all): 1,204

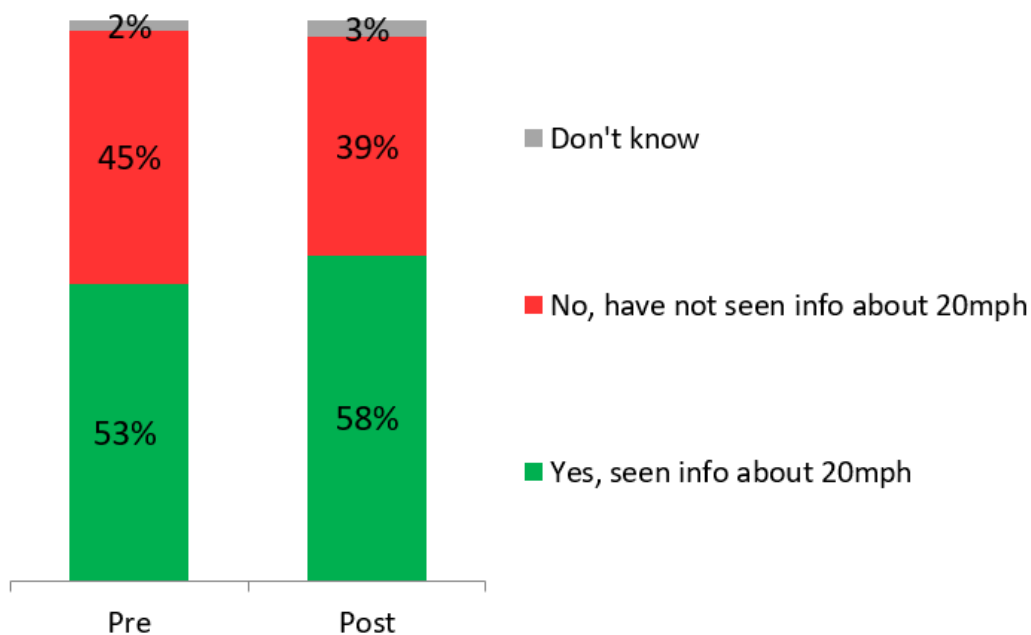
Awareness of the speed limits was higher among men (87% v 83% of women) and those with children in the household (94% v 81%), and lowest among the youngest respondents (59% of 16-24s). This is likely to reflect patterns of car ownership identified earlier in this report. Drivers were also more likely to be aware of the introduction of the scheme (93% v 74% of those who do not personally drive).

Levels of awareness varied by Zone, with highest awareness evident in Zone 5 (West) (93%), Zone 4 (North West) (90%), and Zone 6 (South) (90%) – the most recent areas the scheme was implemented – and lowest in Zone 3 (South Central/East) (71%). Awareness was also higher among those living on quieter streets (87% v 75% among residents of busier streets).

4.4.1 Information and advertising about 20mph

Six in ten respondents (58%) in the Post wave recalled seeing or hearing some kind information or advertising about the introduction of 20mph speed limits – an increase compared to the Pre wave (53%) – see Figure 11.

Figure 11: Whether respondents have seen or heard information / advertising about 20mph



Base (all): 1,215, 1,204

Those who were most likely to say they had seen or heard any information about the 20mph speed limits included:

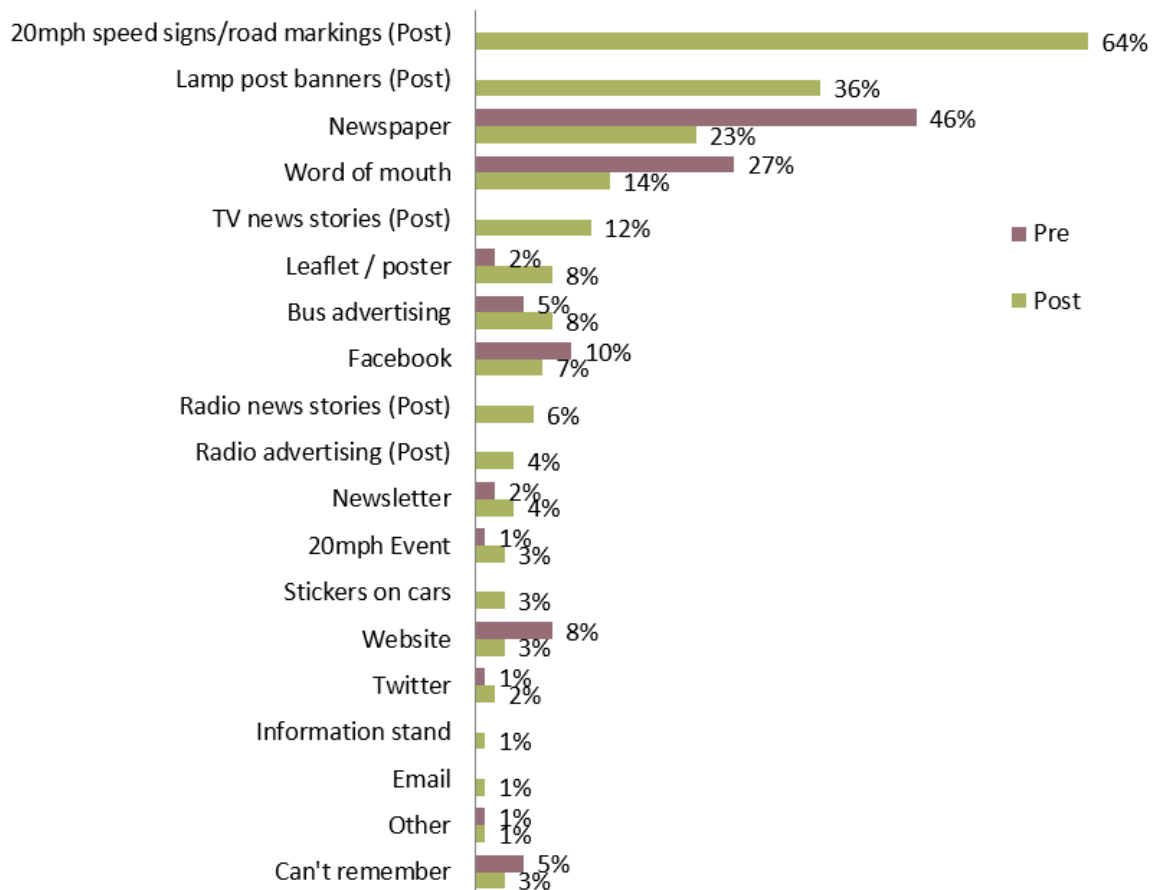
- ABC1s (63%, v 54% of C2DEs)
- Those with children in the household (68% v 54% of those without children)
- Drivers (67% v 45% of non-drivers).

Conversely, the youngest respondents were least likely to have seen any information about the scheme (40%, v 56%-64% across other age groups).

4.4.2 Sources of information about 20mph

Those respondents who said they had seen or heard any information about the 20mph speed limits were asked where they had seen or heard about it. In the Post wave the most common sources of information were 20mph speed signs/road markings (mentioned by 64%), lamp post banners (36%), newspapers (23%) and word of mouth (14%). See Figure 12³.

Figure 12: Where respondents saw or heard information / advertising about 20mph



Base (all who had seen/heard information/advertising about 20mph): Pre 644, Post 693

³ This chart also shows Pre wave figures, but please note these are not directly comparable – the response options were slightly different in the Post wave to reflect the sources of information that were in place post-implementation, and to provide more detailed options for TV and radio news stories (the previous code was ‘TV/radio advertising’, mentioned by 36%).

There were very few notable sub-group differences in terms of where respondents had seen or heard information.

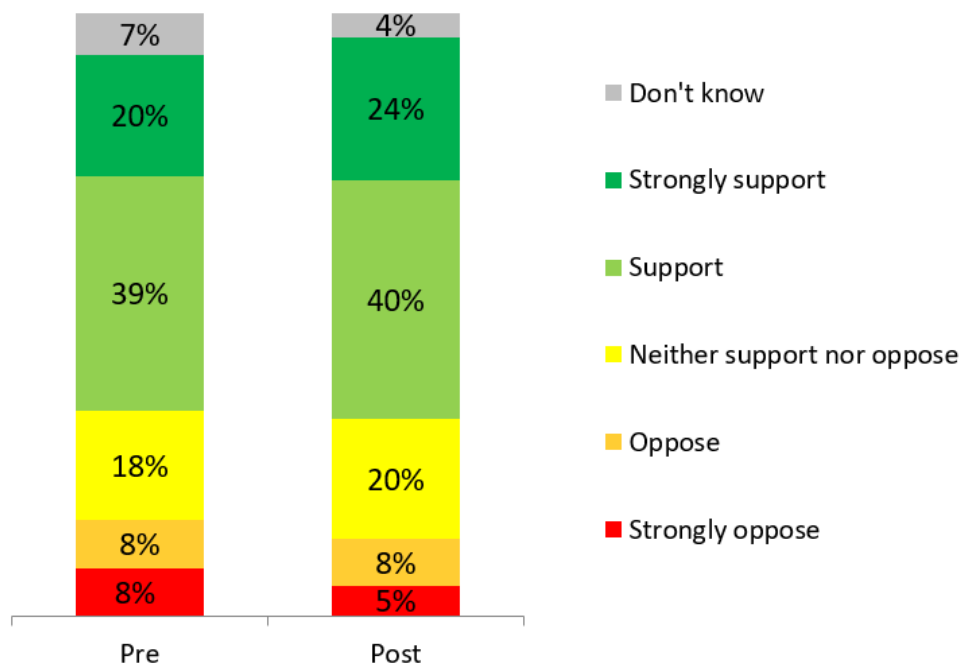
4.4.3 Support for the 20mph network

Respondents were given the following description of the 20mph network, before being asked to what extent they support or oppose it:

“The 20mph streets have been implemented across the whole city [SHOW MAP]. There aren’t any extra road humps but there are signs and road markings at the entrances to side roads and smaller ones at intervals to remind people of the limit. Most of the main roads keep the 30mph speed limit”.

As shown in Figure 13, there was broad support for the introduction of 20mph speed limits, in both the Pre and Post waves. Before implementation of the speed limits, 58% supported it overall and a fifth strongly supported it. In the Post wave, this had increased to a total of 64% supporting the scheme, and 24% strongly supporting it. There has also been a drop in the proportion opposing it, either strongly (from 8% to 5%), or opposing it overall (from 17% to 12%).

Figure 13: Extent of support for the 20mph network



Base (all): Pre 1,215, Post 1,204

Sub-group differences in levels of support for the speed limits included:

- Women were more supportive than men: 72% of women supported the speed limits v 56% of men, while 18% of men opposed it v 7% of women.
- Those with children in the household were also more supportive (70% of respondents with children said they support it, compared to 62% of those without children).

- The youngest age group expressed lower levels of support than the oldest – 56% of 16-24s supported it, compared to 71% of those aged 65+. However, the youngest were more likely to say they did not know (9% of 16-24s said 'don't know', v 2%-3% across the other age groups).
- Drivers were more likely oppose the scheme than non-drivers (19% of drivers opposed it, compared to 3% of non-drivers), while non-drivers expressed higher levels of support (72% v 58%).

4.4.4 Perceived impact of 20mph speed limits on amount of noise, congestion, through traffic and aggressive driving

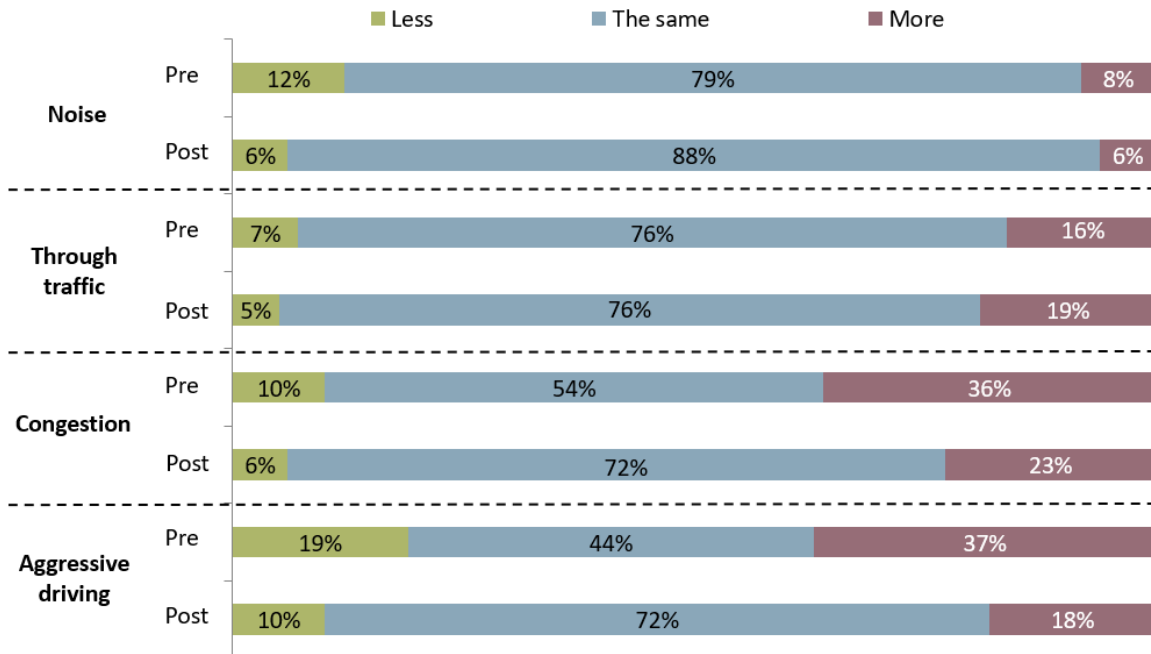
Respondents in the Pre wave were asked what they thought the impact of the 20mph speed limits would be on various aspects of their neighbourhood. In the Post wave, they were asked about any actual impacts experienced following the implementation of the scheme.

The first set of questions related to the impact on various aspects of the local area after the implementation of the speed limits: some were positive (e.g. amount of cycling / walking in the area) and others were negative (e.g. noise, congestion etc).

Figure 14 shows the results for the negative aspects included in these questions (analysis excludes those who said they did not know). In the Pre wave, the most common response for all of these was that they were expected to remain unchanged, i.e. the introduction of the 20mph scheme would not have an impact on these concerns. Four in ten felt there would be more aggressive driving (37%) and congestion (36%) following implementation, although smaller proportions predicted more noise (8%) or more through traffic in the area (16%). The most positive predicted impact in relation to these aspects was in terms of aggressive driving: almost a fifth (19%) thought there would be less of this after implementation.

In the Post wave, again the most common response was that there had been no change in these aspects – i.e. respondents tended not to have noticed any impact, either positive or negative. Fewer reported there was less noise (6% v 12%), congestion (6% v 10%) or aggressive driving (10% v 19%) than had predicted this in the Pre wave, but fewer also reported that there was more congestion (23% v 36%), aggressive driving (18% v 37%) than had feared this would be the case before the speed limits were introduced.

Figure 14: Perceived impact of 20mph limits on amount of noise, congestion, through traffic and aggressive driving (excluding 'Don't know')



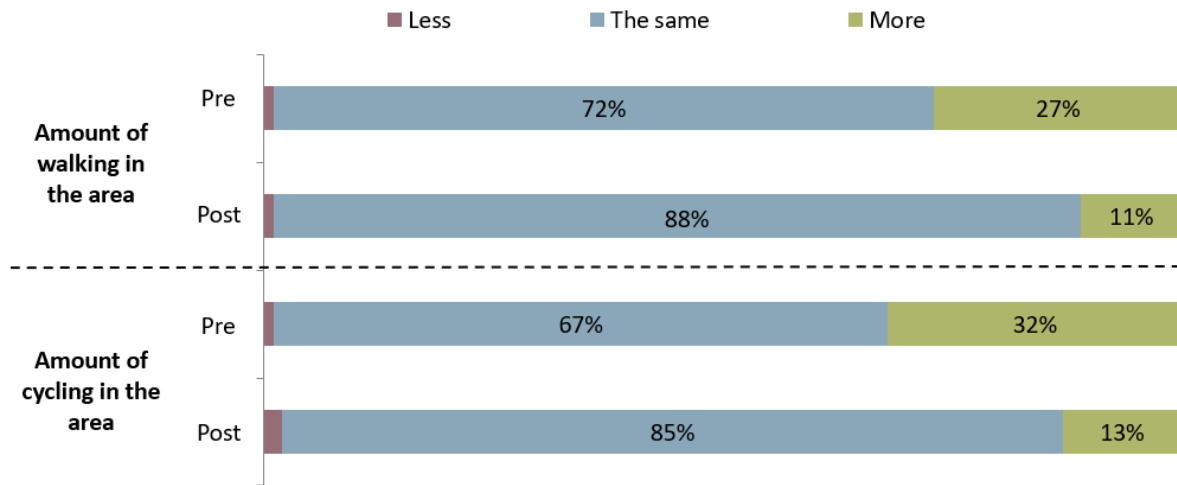
Base (all excluding DK): Pre 1,034~1,134, Post 1,102~1,154

There were no differences in reported impacts by demographic sub-groups of the sample. Respondents who personally drive were more likely than non-drivers to report an increase in aggressive driving (22% v 13%); this was the only aspect where drivers gave a different response to non-drivers.

4.4.5 Perceived impact of 20mph speed limits on amount of cycling and walking

In terms of changes in the amount of cycling and walking in the area, a substantial minority of respondents in the Pre wave predicted improvements, with 32% saying there would be more cycling and 27% saying there would be more walking in their area after the speed limits were introduced (excluding those who said they did not know). Although smaller proportions in the Post wave reported that this had actually happened, at least one in ten did report more walking (11%) and cycling (13%) following the implementation of the scheme – see Figure 15.

Figure 15: Perceived impact of 20mph limits on amount of cycling and walking (excluding ‘Don’t know’)



Base (all excluding DK): Pre 1,087~1,090, Post 1,089~1,118

Again, there were no statistically significant differences in reported impacts by demographic sub-groups of the sample, or between drivers/non-drivers.

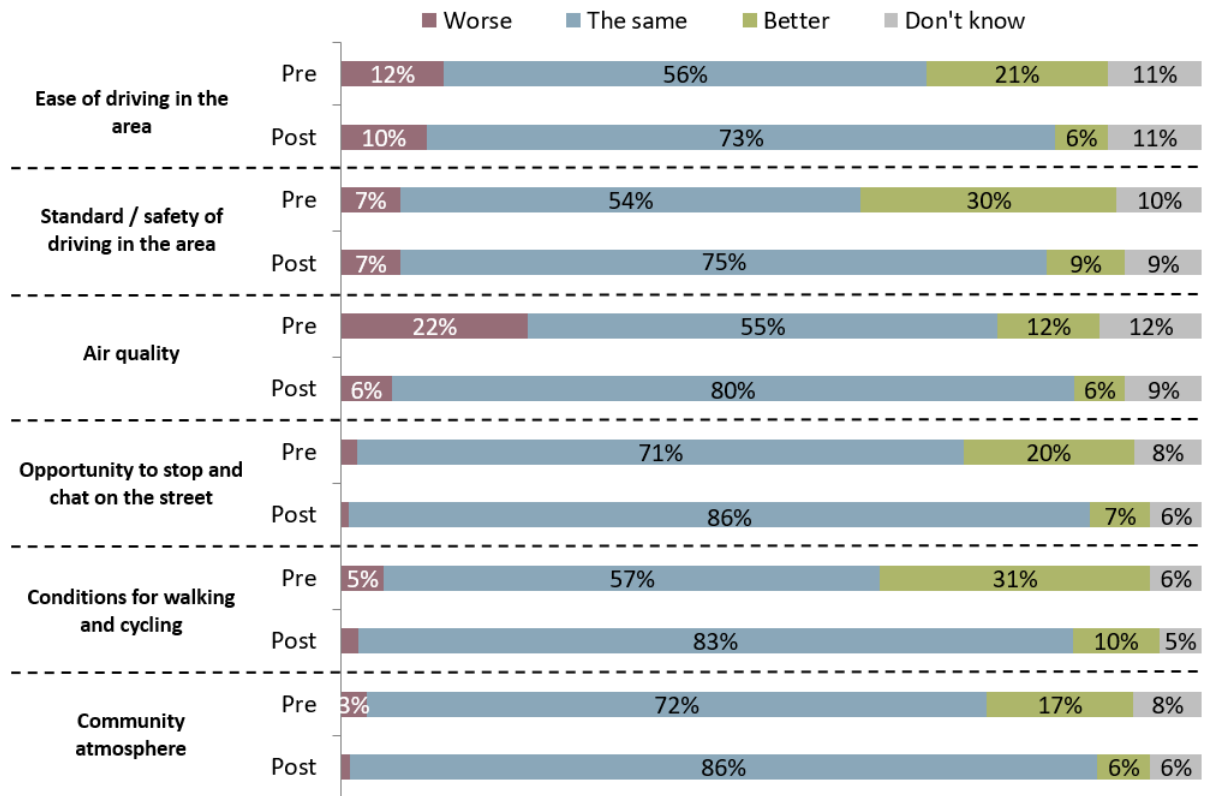
4.4.6 Perceived impact of 20mph speed limits on the local area

Questions were also asked in relation to whether various aspects of the local area would get better or worse after the 20mph speed limits were introduced. As illustrated in Figure 16, responses in the Pre stage tended to suggest things would remain the same or get better, with very few highlighting aspects that would get worse after implementation.

Key areas where the highest proportion of respondents predicted an improvement were for conditions for walking and cycling (31% thought this would be better) and the standard / safety of driving in the area (30%). Around a fifth of respondents felt that ease of driving would be better (21%), there would be greater opportunities to stop and chat on the street (20%) and that the community atmosphere would improve (17%). There was a concern, however, amongst a substantial minority of respondents (22%) that the air quality would actually get worse as a result of the introduction of the scheme.

In the Post wave, respondents tended to say that things were the same as before the speed limits were introduced, and more said this than had predicted no change initially. This means that, while some of the predicted benefits were not widely reported in the Post stage (one in ten or less reported benefits across these aspects) the concerns about air quality have also not been realised to the extent that they were predicted.

Figure 16: Perceived impact of 20mph limits on the local area



Base (all): Pre 1,215, Post 1,204

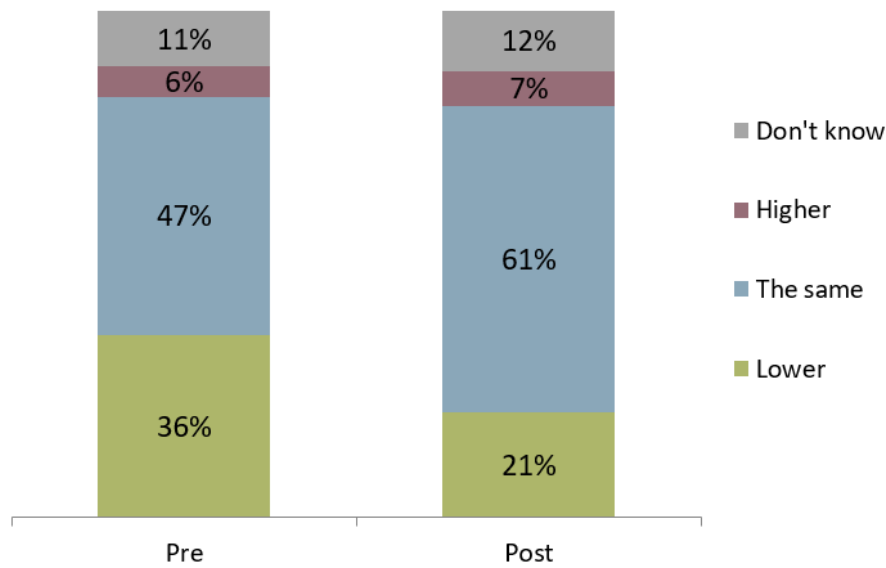
There were few sub-group differences in relation to these questions, with the exception of:

- Those with children in the household were more likely to report improvements in conditions for walking and cycling (14% v 9% said this was better), ease of driving (8% v 5% said this was better) and standard/safety of driving (12% v 7%), while those without children were more likely to say they did not know.
- Drivers tended to be more likely to say things had got worse, whereas non-drivers were more likely to say they didn't know. For example, drivers were more likely to say ease of driving had got worse (15% v 4%) and that standard/safety of driving had got worse (9% v 5%).

4.4.7 Perceived impact of 20mph speed limits on traffic speeds

In the Pre wave, around half of respondents (47%) predicted that traffic speeds would be the same in their area after the implementation of the 20mph network, while 36% thought speeds would get lower. A small minority (6%) thought speeds would be higher, although one in ten (11%) said they did not know (see Figure 17). In the Post wave, a higher proportion reported that speeds were the same (61%) while fewer said that speeds were lower (21%).

Figure 17: Perceived impact of 20mph network on traffic speeds



Base (all): Pre 1,215, Post 1,204

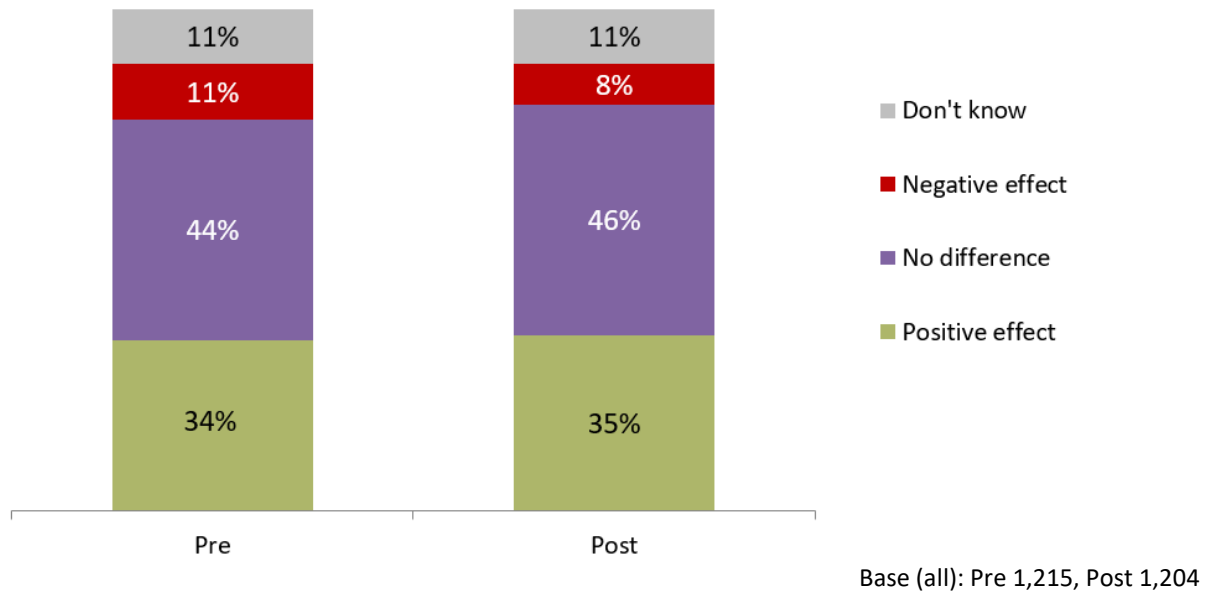
The only sub-group difference in response to this question was that drivers were more likely to say traffic speeds were the same – but non-drivers were more likely to say they did not know.

4.4.8 Perceived impact of 20mph speed limits on quality of life

Respondents were asked before the speed limits were introduced whether they felt they would have a positive or negative effect on the quality of life in their neighbourhood. More people felt it would have a positive effect on quality of life (34%) than said it would have a negative effect (11%), although the most common answer was that it would make no difference (44%), while 11% said they did not know (see Figure 18).

In the Post wave, respondents were asked to judge what the impact had been on quality of life, now that the speed limits were in place. The findings were fairly consistent between the two waves, with 35% reporting a positive effect and 46% saying there was no difference. However, there had been a drop in the proportion saying the speed limits have had a negative effect on quality of life (8%, compared to 11% who predicted this in the first survey).

Figure 18: Perceived effect on quality of life in the neighbourhood



Sub-group differences in responses to this question included:

- Men were more likely than women to say it had had a negative effect (11% v 5%).
- Higher socio-economic groups were more likely to report a positive effect on quality of life (ABC1 40%, C2DE 31%).
- Respondents with children in the household were more likely to report a positive effect (42% v 32%).
- Drivers were slightly more negative in response to this question than non-drivers: those who drive were more likely to report a negative effect (12% v 3% of non-drivers), although those who didn't drive were more likely to say they did not know (18% v 5%).
- There were no differences in reported impact on quality of life across the 6 Zones or street type.

Generally then, the most positive responses were seen among women, higher socio-economic groups, those with children and non-drivers.

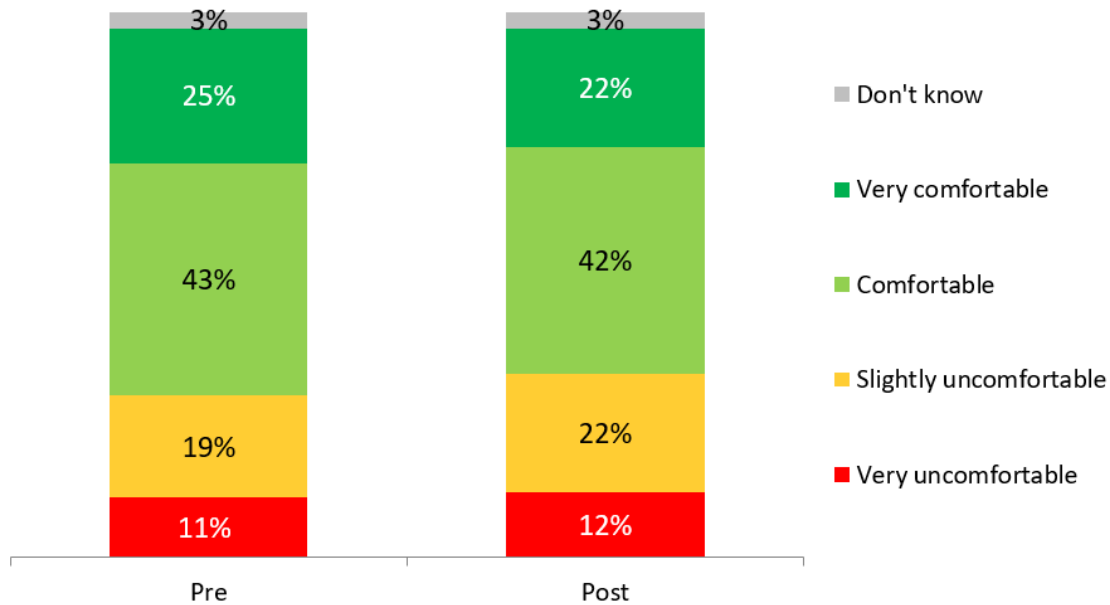
4.4.9 Comfort driving at 20mph

Overall, 55% in the Pre wave sample and 56% in the Post wave sample reported that they personally drive a car. These respondents were asked how comfortable they (think they will) feel driving at 20mph. In the Pre wave, most (68%) said the speed limits would not pose a problem, with 43% saying they would feel comfortable and 25% saying they would feel very comfortable. A substantial minority of drivers, however, reported that they thought they would feel uncomfortable: 29% overall said this, with 11% saying they would feel very uncomfortable (see Figure 19).

In the Post wave, findings were very similar when people were asked about levels of comfort driving at 20mph now the speed limits were in place: there were no statistically significant differences in

responses between the waves. Overall, 63% said they feel comfortable driving at 20mph, while 34% said they felt uncomfortable.

Figure 19: Levels of comfort driving at 20mph



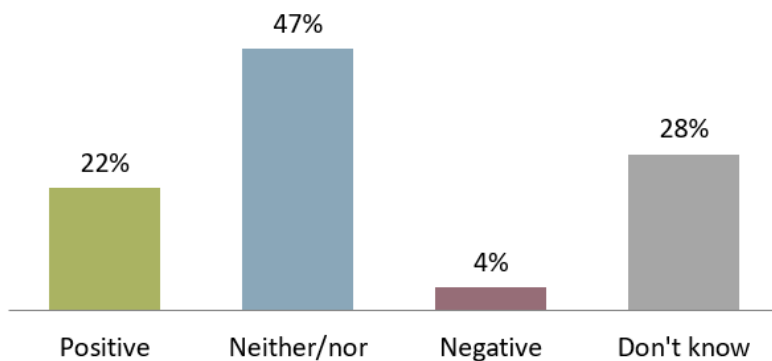
Base (all drivers): Pre 665, Post 686

Women (69%) were more likely to report feeling comfortable driving at 20pm than men (58%), as were the oldest respondents (73% of 65+ compared to 61% of 25-44s and 60% of 45-64s). The higher socio-economic groups were also more likely to say they felt comfortable driving at 20mph (69% of ABC1s v 57% of C2DEs).

4.4.10 Perceptions of media coverage of the 20mph speed limits

Two new questions were added to the Post wave survey about media coverage of the speed limits. First, respondents were asked what they thought about the media coverage (in newspapers, online and on TV) about the 20mph rollout. As shown in Figure 20, around half thought the coverage had been neither positive nor negative, while 22% thought it had been positive and just 4% said it had been negative. However, almost three in ten said they did not know (28%).

Figure 20: Perceptions of media coverage

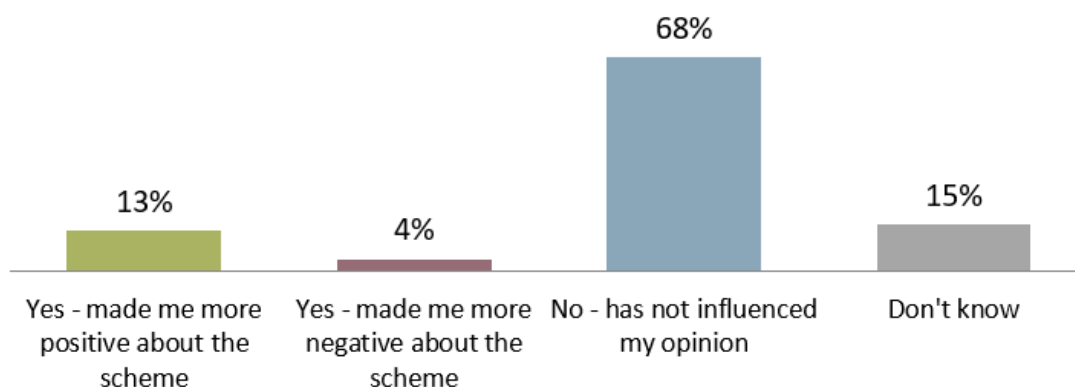


Base (all): Post 1,204

There were no demographic differences in the perceived tone of media coverage about the scheme, although the youngest were most likely to say they did not know (39% v 25%-27% among other age groups).

Respondents were then asked whether media coverage had influenced their opinion about the 20mph rollout, and the majority (68%) said it had not – see Figure 21. However, 13% said media coverage had made them more positive about the scheme, and very few (4%) said it had a negative impact on their views.

Figure 21: Influence of media coverage



Base (all): Post 1,204

Those with children in the household were more likely to report media coverage made them more positive about the scheme (17% v 11%), while those without children were more likely to say they did not know (17% v 12%). Again, the youngest respondents were also most likely to say they did not know (26% of 16-24s compared to 12%-16% among other age groups).

4.4.11 Other comments

Finally, respondents were asked if they had any other further comments about the proposed 20mph speed limits. Tables 10 and 11 provide a breakdown of the main categories of feedback, for those who chose to provide a comment in each wave.

Please note that respondents were more likely to provide a comment in the Post wave: 34% gave feedback, compared to just 23% in the Pre wave. In addition, different responses were given in the Pre wave before the speed limits were introduced, so the data is not directly comparable.

Table 10: Other comments (Pre wave)

Comments	Pre
General negative comment (I don't think it is a good idea / it will not work)	18%
Concerns over how it will be enforced	13%
General positive comment (e.g. it is a good idea)	12%
It is useful in some areas of the city but not everywhere	9%
The council needs to focus more on fixing potholes / parking issues	8%
20mph is too slow	8%
I think it will cause more congestion	5%
I think it will improve safety	5%
It won't affect me	5%
I think it will cause more pollution	3%
I have mixed feelings	2%
Things are OK as they are	2%
Other	11%
Base (all who provided a comment)	277

Table 11: Other comments (Post wave)

Comments	Post
Should only be some areas / times	22%
People do not comply	20%
General positive comment (e.g. it is a good idea / safer)	17%
Too slow / should be 30mph / higher	10%
It increases traffic and parking issues	10%
General negative comment (e.g. it is a bad idea / unnecessary)	10%
It should be better enforced	9%
Requests for speedbumps / cameras etc	5%
It causes bad driving	4%
Need greater awareness / signage	3%
It is environmentally detrimental	3%
Other specific issues with local roads/traffic	3%
Other	7%
Base (all who provided a comment)	409

5 Conclusions

5.1 Introduction

This Pre- and Post-Stage survey has provided data from two very robust, representative samples of Edinburgh residents and obtained a wealth of data in relation to travel behaviour, children’s travel, and awareness of and attitudes towards the 20mph speed limits. Post-Stage results have allowed measurement of change following the implementation of the 20mph network across the City, with Post-Stage fieldwork conducted 1 to 2.5 years after implementation of the speed limits depending on the s.

5.2 Current travel behaviour and perceptions of speeds and safety

5.2.1 Travel behaviour

A range of travel methods was used by respondents, with travelling on foot, by car or by bus being the most common. Cycling was less frequently mentioned, although around a fifth of respondents reported that they ever cycle.

Differences between the two waves did not give a clear-cut picture of impacts of the 20mph speed limits, which were at least in part designed to encourage active travel choices. Car use was relatively consistent between waves, although more now said they drive every day compared to the Pre wave. However, more of those who travel by car in the Post wave said the amount they travel by car had **decreased** in the last year. Overall bus use had gone down, with more now saying they never travel by bus. However, among those who did travel by bus, more now reported that their levels of use had **increased** in the last year.

In terms of active travel, fewer respondents now reported that they travel by foot frequently, but among those who do, there had been an increase in the proportion reporting that the amount they walk had **increased** in the last year. Similarly, while there had been no change in the findings in relation to cycling behaviour among the whole sample, among those who do cycle there had been a slight increase in the proportion saying they cycle more than they did last year (though this was statistically significant at the 90% rather than 95% level). This perhaps suggests that the speed limits have encouraged people who were already using active travel methods to do so more, but have not nudged people who didn’t already walk or cycle to switch to these means of transport.

The majority of children currently travel to school on foot, as was the case in the Pre wave. There was some variation by the age of child, with a greater proportion of secondary school aged children travelling to school by bus (although bus use had gone down among this group compared to the Pre wave). There was no evidence of a shift towards more active travel choices for children getting to school. Other findings in relation to making trips without adult supervision were also broadly consistent between waves.

5.2.2 Perceptions of safety

Data from the survey points to a degree of concern among residents in relation to travel in their area, both for respondents themselves and particularly for children. For example, around three in ten respondents felt that speeds were too fast on their own street or main roads in the area, and around

half thought traffic speeds were unsafe for children cycling on the road. However, several positive shifts were observed compared to the Pre-Stage results:

- The proportion of parents agreeing that they worry about danger from traffic in their street has dropped, from around seven in ten agreeing in the Pre wave to six in ten in the Post wave
- More respondents in the Post wave said they thought speeds were 'very safe' for themselves cycling, and fewer said 'very unsafe', or very/slightly unsafe overall
- There was a decrease in the proportion who thought speeds were unsafe (either very of slightly), for children both walking and cycling.

5.3 Awareness of and support for the 20mph scheme

In the Post-Stage survey, more than eight in ten respondents were aware of the introduction of the speed limits – although this was higher among drivers. Despite the high levels of awareness overall, it is worth noting that 7% of drivers living in the six Zones did **not** say they were aware of the 20mph limits, despite them being implemented for at least a year at the time the survey was conducted.

The key information source about the scheme was 20mph speed signs/road markings (seen by around two thirds of those who had seen information or publicity about the scheme). Lamp post banners were mentioned by around a third, and a fifth had read information in newspapers.

Respondents in the Post wave were in favour of the 20mph speed limits, with a total of 64% saying they supported it (and 24% supported it strongly). Support has increased since the Pre wave, when a total of 58% supported it overall and a fifth strongly supported it. There has also been a drop in the proportion opposing the scheme since the Pre wave, although around one in ten still say they oppose it.

Strength of support tended to reflect levels of concern about traffic speeds; for example, those with children in the household tended to be most concerned about safety and were also more supportive of the speed limits.

5.4 Perceived impacts of the 20mph scheme

When asked to predict the impacts of the scheme on various aspects of their local neighbourhood, respondents in the Pre wave tended to anticipate that things would remain largely the same. For example, most people predicted that there would be the same amount of noise, congestion, through traffic and aggressive driving, as well as the amount of cycling and walking in the area, following the implementation of 20mph speed limits.

Key areas where higher proportions of respondents (around three in ten) predicted an improvement were for conditions for walking and cycling and the standard / safety of driving in the area. In addition, around a fifth of respondents expected that ease of driving would be better, there would be greater opportunities to stop and chat on the street and that the community atmosphere would improve. However, some concerns were also expressed, with the most commonly mentioned issues being a predicted increase in aggressive driving and congestion.

Post wave results show that respondents were more likely to report no change compared to the proportion who had predicted change before the introduction of the 20mph limits. This applies to both positive and negative aspects, i.e. concerns about aggressive driving and congestion had not been realised, but the expected benefits in relation community benefits etc had not yet been observed.

However, it is worth noting that around one in ten respondents did report more walking (11%) and cycling (13%) following the implementation of the scheme.

5.5 Demographic trends

Throughout the analysis, key demographic trends were evident in responses to the 20mph scheme. For example:

- In general, women were more concerned about traffic speeds and more supportive of the introduction of speed limits, while men were less concerned and more likely to oppose the limits (although the majority of men did support the scheme).
- Respondents who drive were also less likely than non-drivers to support the speed limits (although the majority of drivers did support the 20mph scheme). These findings may well be linked, since men in the sample were more likely than women to be drivers.
- The oldest respondents tended to have most concerns about safety and traffic speeds. The youngest age group were least likely to support the 20mph scheme (although they were more likely to say they did not know, rather than express opposition).
- Although there was no difference between socio-economic groups in terms of overall support / opposition to the scheme, ABC1s were more likely than C2DEs to report that the speed limits have had a positive impact on quality of life in their area.

5.6 Conclusions

The research has found high levels of support for the introduction of 20mph speed limits across Edinburgh. However, evidence of impact on behaviours is less conclusive: many of the metrics measured during the Pre wave did not change in the Post wave and the majority of respondents stated that they saw 'no difference' or that key potential impacts (such as reduction of congestion, more walking, better air quality, etc.) remained unchanged since implementation. Nevertheless, comparing the research data between the Pre and Post waves shows some possible outcomes of the introduction of the 20mph speed limits.

Although the overall proportions of people using active travel options has not increased, a higher proportion of those who do walk and cycle in the Post wave reported the amount of walking/cycling that they do had increased in the last year. In addition, more respondents in the Post wave said they thought traffic speeds were 'very safe' for cycling. Around one in ten respondents in the Post wave reported that there had been an increase in walking and/or cycling in their area since the introduction of the new speed limits.

The perceptions of parents and people generally that the city's streets are safe for children have also improved. For example, the proportion of parents agreeing that they worry about the danger to their children from traffic in their street has decreased, and there have been decreases in the proportions of people who consider traffic speeds to be unsafe for children walking or cycling.

It is also important to note that over a third of respondents in the Post wave stated that the introduction of the 20mph speed limits had had a positive impact on the quality of life in their neighbourhood.

In conclusion, although early indications of the impact of the 20mph speed restrictions on behaviours are limited, most respondents feel positively towards the scheme. Behaviour change is a long term process and is influenced by a myriad of factors. It may therefore be some years before conclusive changes in travel behaviour and the quality of life in neighbourhoods is measurable.



Appendix 1: Post-stage questionnaire

Introduction

Good morning/afternoon, I am _____ from Progressive, an independent market research company which is carrying out a survey on behalf of the City of Edinburgh Council. The survey is about travel in your area, including speed limits in your street. It will take about 8-10 minutes to complete. Would you like to take part?

Outcome:

	CODE	ROUTE
Yes	1	Continue
No	2	Close

Before I start, I just need to give you a few details about the research. This survey may include collecting information about you such as your age or gender, but you do not have to answer these questions if you prefer not to. No personal data will be provided to the Council. Your personal details will never be passed to any other third parties.

You are free to withdraw at any stage of the research, including withdrawing permission after the survey to use the information you provided. I can give you contact details for Progressive at the end of the interview if you would like.

REASSURE IF NECESSARY:

The survey is completely confidential, in accordance with the Market Research Society Code of Conduct. The answers you give in the survey will be combined with answers from other people who have taken part to give overall survey findings. No one will be able to identify you individually from the data.

I have a copy of Progressive’s privacy statement if you would like to read it.

SQ1: Consent

Are you happy to continue with the survey?

	CODE	ROUTE
Yes	1	Continue
No	2	Close

Classification for quota control

SQ1. Interviewer to code: Zone

	CODE
Zone 1: City Centre and Rural West	1
Zone 2: North	2
Zone 3: South Central / East	3
Zone 4: North West	4
Zone 5: West	5
Zone 6: South	6

SQ2. Can I just check your postcode? *[Script to ensure only relevant postcodes can be entered]*

EH			
----	--	--	--

SQ3. Interviewer to code: Street type

	CODE

Quiet residential	1
Busy / main road	2

SQ4. Interviewer to code: Gender

	Code
Male	1
Female	2

SQ5. Which of the following age groups do you fall into?

	Code
16-24	1
25-34	2
35-44	3
45-54	4
55-64	5
65-74	6
75-84	7
85+	8
Prefer not to say	9

SQ6. What is your working status? [SHOWSCREEN]

	Code
Working - Full time (30+ hrs)	1
Working - Part-time (9-29 hrs)	2
Self employed	3
Unemployed	4
Not working - retired	5
Not working - looking after house/children	6
Not working - invalid/disabled	7
Not working – carer	8
Student	9
Other (please specify)	10

Main survey questions

Q1. How often do you use the following means of travel?

	Every day	Several times a week	About once a week	About once a fortnight	About once a month	Less than once a month	Never
Bus or coach	1	2	3	4	5	6	7
Motorcycle, scooter or moped	1	2	3	4	5	6	7
Car or van	1	2	3	4	5	6	7
Taxi/minicab	1	2	3	4	5	6	7
Bicycle	1	2	3	4	5	6	7
On foot	1	2	3	4	5	6	7
Train	1	2	3	4	5	6	7
Tram	1	2	3	4	5	6	7

Ask for all those used at least once a month (any coded 1-5 at Q1)

Q2. For each of the means of travel you use, please tell me why you travel this way? [Spontaneous, MULTICODE]

	Q2a Bus or coach	Q2b Motorcycle, scooter, moped	Q2c Car or van	Q2d Taxi or minicab	Q2e Bicycle	Q2f On foot	Q2g Train	Q2h Tram
Journey time	1	1	1	1	1	1	1	1
Reliability	2	2	2	2	2	2	2	2
Safety	3	3	3	3	3	3	3	3
Comfort	4	4	4	4	4	4	4	4
Convenience	5	5	5	5	5	5	5	5
Cost	6	6	6	6	6	6	6	6
Difficulty/cost of parking	7	7		7	7	7	7	7
Habit/always done	8	8	7	8	8	8	8	8
Health benefits	9	9	8	9	9	9	9	9
Less stressful	10	10	9	10	10	10	10	10
Need car/bike at destination		11	10		11			
Environmental benefits	11	12	11	11	12	11	11	11
No alternative	12	13	12	12	13	12	12	12
Other (specify)	13	14	13	13	14	13	13	13

Ask for all those ever used (any coded 1-6 at Q1)

Q3. And for each of the means of travel you ever use, has the amount you travel increased, decreased, or stayed the same over the last year?

	Increased	Stayed the same	Decreased	Don't know
Bus or coach	1	2	3	4
Motorcycle, scooter or moped	1	2	3	4
Car or van	1	2	3	4
Taxi/minicab	1	2	3	4
Bicycle	1	2	3	4
On foot	1	2	3	4
Train	1	2	3	4
Tram	1	2	3	4

Q4. How many children aged 16 or under live in your household?

	CODE
One	1
Two	2
Three	3
Four	4
Five	5
Six	6
More than six	7
No children 16 or under in the household	8

Ask if children in household (i.e. unless Q4=8)

Please tell me the age of each child under 16 in your household:

- Q5a. Child 1 Age _____
- Q5b. Child 2 Age _____
- Q5c. Child 3 Age _____
- Q5d. Child 4 Age _____
- Q5e. Child 5 Age _____
- Q5f. Child 6 Age _____

Q6. How does each child **usually** travel to school? If they use more than one means of transport, please tell me the one they use for the longest part of the journey.

	Q6a Child 1	Q6b Child 2	Q6c Child 3	Q6d Child 4	Q6e Child 5	Q6f Child 6
Car						
Foot						
Cycle						
Bus						
Train						
Other (write in)						
N/A – child is not at school						

ASK FOR THOSE CHILDREN WHO ARE AT SCHOOL (i.e. not N/A above)

Q7. Do they usually make this journey with or without adult supervision?

	Q7a Child 1	Q7b Child 2	Q7c Child 3	Q7d Child 4	Q7e Child 5	Q7f Child 6
With adult supervision						
Without adult supervision						

Q8. Do you ever allow them to make any other local trips that involve crossing a road without adult supervision?

	Q8a Child 1	Q8b Child 2	Q8c Child 3	Q8d Child 4	Q8e Child 5	Q8f Child 6
Yes						
No						

Q9. Do they ever play in the street?

	Q9a Child 1	Q9b Child 2	Q9c Child 3	Q9d Child 4	Q9e Child 5	Q9f Child 6
Yes						
No – I don't allow them to						
No – child doesn't want to						

Q10. I'm going to read out a number of statements about factors that influence parents' and guardians' attitudes towards children's independent travel and street play. For each one I'd like you to tell me how much you agree or disagree with that statement. That is, agree strongly, agree slightly, disagree slightly or disagree strongly.

	Agree strongly	Agree slightly	Disagree slightly	Disagree strongly	Don't know / NA
I worry about 'stranger danger' in my street	1	2	3	4	5
I worry about my children mixing with other kids without any control in my street	1	2	3	4	5
I worry about danger from traffic in my street	1	2	3	4	5

ASK ALL

Q11. What do you think of traffic speeds on your street outside rush hours? And what about on main roads in the area?

Interviewer note: if respondent's street is a main road ask them to think of other main roads in and around their area.

	Q11a My street	Q11b Main roads
Much too fast	1	1
A bit too fast	2	2
Just about right	3	3
A bit too slow	4	4
Much too slow	5	5
Don't know	6	6

Q12. How safe do you think traffic speeds are in the local area, **for you personally**, when cycling or walking?

	Very unsafe	Slightly unsafe	Quite safe	Very safe	Don't know	N/A – do not do this
Walking	1	2	3	4	5	6
Cycling	1	2	3	4	5	6

Q13. How safe do you think traffic speeds are in the local area, **for children** cycling or walking?

	Very unsafe	Slightly unsafe	Quite safe	Very safe	Don't know
Walking	1	2	3	4	5
Cycling on the road	1	2	3	4	5

Q14. The rollout of 20mph speed limits started in July 2016 and has been implemented in four phases. The speed limits cover shopping areas, residential areas and areas with high levels of pedestrians and cyclists. The new 20mph speed limits have been in place in your area since **[INSERT DATE BY ZONE]**. Were you aware that 20mph speed limits had been introduced in your area?

	CODE
Yes	1
No	2
Don't know	3

Q15. Have you seen or heard any information or advertising about the introduction of 20mph speed limits?

	CODE
Yes	1
No	2
Don't know	3

Ask if seen any info/advertising (Q15=1)

Q16. Where did you see or hear this information or advertising? [MULTICODE]

INTERVIEWER NOTE: PLEASE PROBE ON MENTIONS OF TV OR RADIO – WAS IT AN ACTUAL ADVERT, OR A NEWS STORY / DISCUSSION?

	CODE
Newspaper	1
Website	2
Facebook	3
Twitter	4
Email	5
Leaflet/poster	6
Newsletter	7
TV news stories	8
Radio news stories	9
Radio advertising	10
Bus advertising	11
Stickers on cars/taxis	12
Lamp post banners	13
20mph speed signs / road markings	14
Information stand	15
20mph Event (e.g. community meeting / launch event)	16
Word of mouth (e.g. from friends / family / colleagues etc.)	17
Other (specify)	18
Can't remember	19

Q17. The 20mph streets have been implemented across the whole city [SHOWCARD]. There aren't any extra road humps but there are signs and road markings at the entrances to side roads and smaller ones at intervals to remind people of the limit. Most of the main roads keep the 30mph speed limit. To what extent do you support or oppose the 20mph network?

	CODE
Strongly support	1
Support	2
Neither support nor oppose	3
Oppose	4
Strongly oppose	5
Don't know	6

Q18. I'd like to ask you some questions about what you think the effects of the 20mph speed limits are in your area. Firstly, do you think there is more or less of the following in your neighbourhood since the speed limits were introduced on **[INSERT DATE BY ZONE]** [SHOW SCREEN FOR RESPONSE OPTIONS]

	More	The same	Less	Don't know
Noise	1	2	3	4

Congestion	1	2	3	4
Through traffic	1	2	3	4
Aggressive driving	1	2	3	4
Amount of walking in the area	1	2	3	4
Amount of cycling in the area	1	2	3	4

Q19. Do you think the following are better or worse in your neighbourhood since the speed limits were introduced on the **[INSERT DATE BY ZONE]**? [SHOW SCREEN FOR RESPONSE OPTIONS]

	Better	The same	Worse	Don't know
Air quality	1	2	3	4
Conditions for walking and cycling	1	2	3	4
Opportunity to stop and chat on the street	1	2	3	4
Community atmosphere	1	2	3	4
Ease of driving in the area	1	2	3	4
Standard / safety of driving in the area	1	2	3	4

Q20. What effect do you think the 20mph speed limits have had on traffic speeds in your neighbourhood?

	CODE
Higher	1
The same	2
Lower	3
Don't know	4

Q21. Does your household own or have access to a car?

	CODE
Yes	1
No	2

Q22. Do you personally drive a car?

	CODE
Yes	1
No	2

Ask if respondent drives a car (Q22=1)

Q23. How comfortable do you feel driving at 20mph in your local area?

	CODE
Very comfortable	1
Comfortable	2
Slightly uncomfortable	3
Very uncomfortable	4
Don't know	5

Q24. Overall, do you think the introduction of the 20mph speed limits has a positive or negative effect on the quality of life in your neighbourhood?

	CODE
Positive effect	1
No difference	2

Negative effect	3
Don't know	4

Q25. How do you feel media coverage (in newspapers, online and on TV) has been about the 20mph rollout in Edinburgh?

	CODE
Negative	1
Neither positive or negative	2
Positive	3
Don't know	4

Q26. Has media coverage (in newspapers, online and on TV) influenced your opinion of the 20mph rollout in Edinburgh?

	CODE
Yes – made me more positive about the scheme	1
Yes – made me more negative about the scheme	2
No – has not influenced my opinion	3
Don't know	4

Q27. Do you have any further comments about the introduction of the 20mph speed limits?
Interviewer: Probe fully, any other comments?

	CODE
<i>[open-ended field for comments]</i>	
No other comments	1

Q28. The final few questions are for classification purposes. What is the occupation of the chief wage earner in the household?

Interviewer to code SEG:

	Code
AB	1
C1	2
C2	3
D	4
E	5
Prefer not to say	6

Q29. Do you find it difficult to get around because of a permanent disability or a medical condition?

	Code
Yes	1
No	2
Prefer not to say	3

Q30. Which of the following best describes your ethnic group? [SHOW SCREEN]

	Response	Code
	White	
A	Scottish	1
B	Other British	2
C	Irish	3
D	Gypsy/Traveller	4
E	Polish	5
F	Other White ethnic group, please specify	6
	Mixed	
G	Any mixed or multiple ethnic background, please specify	7
	Asian, Asian Scottish, or Asian British	
H	Indian, Indian Scottish or Indian British	8
I	Pakistani, Pakistani Scottish or Pakistani British	9
J	Bangladeshi, Bangladeshi Scottish or Bangladeshi British	10
K	Chinese, Chinese Scottish or Chinese British	11
L	Other, please specify	12
	African	
M	African, African Scottish or African British	13
N	Other, please specify	14
	Caribbean or Black	
O	Caribbean, Caribbean Scottish or Caribbean British	15
P	Black, Black Scottish or Black British	16
Q	Other, please specify	17
	Other Ethnic group	
R	Arab, Arab Scottish or Arab British	18
S	Other, please specify	19
T	Prefer not to say	20

BACK-CHECKING:

As part of our quality control procedures we aim to re-contact 20% of respondents to confirm their satisfaction with the interview and that details were recorded correctly. Could we please use your email address or telephone number for these purposes?

[Collect contact details as usual]

OUTRO:

Thank you for taking part in this research survey. You have the right to access the information you have provided in this survey, and to withdraw consent to process this information after taking part. We will only hold your personal details for a limited time, usually a month after the end of the project. If you decide you want to withdraw consent, here is the information you need in order to let us know [HAND OUT LEAFLET]. I can give you contact details for Progressive if you would like.

Dates for text substitution about when limits were introduced in each zone:

- Zone 1: 31st July 2016
- Zone 2: 28th February 2017
- Zone 3: 28th February 2017
- Zone 4: 16th August 2017
- Zone 5: 16th August 2017
- Zone 6: 5th March 2018

Appendix 2: Technical appendix

Quantitative

Methodology:

- The data was collected by CAPI interviewing.
- The target group for this research study was residents of Edinburgh in the 20mph speed limit zones.
- The target sample size was 1,200 per wave and the final achieved sample sizes were 1,215 Pre and 1,204 Post. The reason for the difference between these two samples was individual interviewers exceeding their targets.
- Fieldwork was undertaken between 8th Feb – 31st March 2016 (Pre), and 11th Feb – 31st March 2019 (Post).
- Respondents were selected using a stratified sampling technique, whereby interviewers worked to specified quota controls on key sample criteria, and selected respondents randomly within these quotas. Quotas were based on 2011 Census data for Edinburgh as a whole and for individual wards.
- The sample is judged to represent the target population well.
- 11 interviewers worked on data collection in the Pre wave, 15 interviewers in the Post wave.
- Each interviewer's work is validated as per the requirements of the international standard ISO 20252.
 - *Face to face* - Validation was achieved by re-contacting (by telephone or email) a minimum of 10% of the sample to check profiling details and to re-ask key questions from the survey. Where telephone/email details were not available, re-contact may have been made by post. All interviewers working on the study were subject to validation on their work.
- None of the work for this project was sub-contracted.
- All research projects undertaken by Progressive comply fully with the requirements of ISO 20252.

Margins of error:

- Since survey data is based on information collected from a sample of the target population (rather than every individual within that group), a certain amount of sampling error will affect the accuracy of results. Larger sample sizes are more accurate than smaller samples, so the margin of error will vary based on the proportion of the overall population included in the survey sample. The accuracy of results will also vary based on the proportion of the sample giving a certain answer to a given question – for example if 99% of the sample give a certain answer, there is less doubt about the results than if 50% of the sample give a certain answer.
- Quota controls were used to guide sample selection for this study. This means that we cannot provide statistically precise margins of error or significance testing as the sampling type is non-probability. The margins of error outlined below should therefore be treated as indicative, based on an equivalent probability sample.
 - The overall sample size of 1,215 provides a dataset with a margin of error of between $\pm 0.56\%$ and $\pm 2.81\%$, calculated at the 95% confidence level (the market research industry standard).
 - The overall sample size of 1,204 provides a dataset with a margin of error of between $\pm 0.56\%$ and $\pm 2.82\%$, calculated at the 95% confidence level (the market research industry standard).
- These figures indicate that, for the Pre wave sample of 1,215, if 50% of respondents gave an answer, we can be 95% sure that the 'true' figures lies between 47.19% and 52.81% (plus or minus 2.81%). If 99% of respondents gave a particular answer, we can be 95% sure that the real figure lies between 98.44% and 99.56% (plus or minus 0.56%).

Data Processing and Analysis:

- Our data processing department undertakes a number of quality checks on the data to ensure its validity and integrity. For CAPI Questionnaires these checks include:
 - Responses are checked to ensure that interviewer and location are identifiable. Any errors or omissions detected at this stage are referred back to the field department, who are required to re-contact interviewers to check.

- Using our analysis package, SNAP, data is imported from our dedicated server where the data has been received via over-the-air synchronisation.
- A computer edit of the data is carried out prior to analysis, involving both range and inter-field checks. Any further inconsistencies identified at this stage are investigated by reference back to the raw data on the questionnaire.
- Where 'other' type questions are used, the responses to these are checked against the parent question for possible up-coding.
- Responses to open-ended questions will normally be spell and sense checked. Where required these responses may be grouped using a code-frame which can be used in analysis.
- Our analysis package is used and a programme set up with the aim of providing the client with useable and comprehensive data. Cross breaks to be imposed on the data are discussed with the client in order to ensure that all information needs are being met.

List of streets for consideration of speed surveys post implementation

As of 23 August 2019, the Road Safety team have received concerns regarding compliance at the following locations:

Streets	
Abbey Mount	Lansdowne Crescent
Abbeyhill	Lauder Road
Abercorn Road	Lauriston Place
Abercromby Place	Leith Walk
Albion Road	Lennel Avenue
Arboretum Place	Lilyhill Terrace
Argyle Crescent	London Street
Baird Road	Lower Granton Road
Balcarres Street	Magdala Crescent
Barntongate Avenue	Magdalene Avenue
Beaufort Road	Manor Place
Belford Gardens	Marchmont Road
Belgrave Road	Marionville Avenue
Bernard Street	Marionville Road
Bingham Avenue	Mayfield Road
Blackford Avenue	McDonald Place
Blackford Road	McDonald Road
Blinkbonny Road	Melville Street
Bonnington Road	Merchiston Avenue
Bonnybridge Drive	Midmar Drive
Bowes Place	Milligan Drive
Braid Avenue	Moffat Way
Braid Farm Road	Montpelier Park
Braid Hills Road	Morningside Drive
Braid Mount	Morningside Grove
Braid Road	Morningside Place
Braidburn Terrace	Mountcastle Drive South
Brighthouse Park Road	Mountcastle South
Brighton Place	Mountcastle Terrace
Broomhall Avenue	Murieston Crescent
Broomhall Road	Murrayfield Road
Broughton Place	Nantwich Drive
Broughton Road	Newhaven Place
Broughton Street	Newmills Road
Bruntsfield Place	North Gyle Road
Buccleuch Street	North Junction Street
Buckstone Crescent	Northfield Broadway
Canaan Lane	Northfield Grove

Chester Street	Northumberland Street
Claremont Park	Observatory Road
Clark Road	Old Liston Road
Clermiston Road	Orchard Drive
Clinton Road	Orchard Road
Clippens Drive	Orchard Road South
Coburg Street	Oswald Road
Coillesdene Avenue	Packard Street
Columba Road	Paisley Crescent
Comely Bank Avenue	Palmerston Place
Comely Bank Road	Parkgrove Street
Comiston Springs Avenue	Parkhead Drive
Craigcrook Road	Peffer Place
Craigentiny Road	Pentland View
Craighouse Gardens	Portobello High Street
Craiglea Drive	Potterow
Craigleith Hill Avenue	Prestonfield Avenue
Craiglockhart Road North	Priestfield Road
Craigmillar Castle Avenue	Primrose Bank Road
Craigmount Avenue	Queen Street
Craigs Crescent	Queensferry Road (Kirkliston, 20mph Section)
Craigs Gardens	Raeburn Place
Craigs Road	Ratcliffe Terrace
Cramond Road North	Ravelston Park
Dalry Road	Regent Terrace
Dean Bridge	Relugas Road
Dean Park Crescent	Restalrig Avenue
Drum Brae Drive	Riccarton Mains Road
Drummond Place	Riselaw Crescent
Drumsheugh Gardens	Robertson Avenue
Dudely Avenue	Rosshill Terrace
Durham Drive	Rothesay Place
East Fettes Avenue	Royal Terrace
East Hermitage Place	Salamander Street
East London Street	Sandercombe Drive
Eglinton Crescent	Saughton Crescent
Elgin Street	Saughton Road North
Eyre Place	Saughtonhall Drive
Fairmile Avenue	Sciennes Road
Fairmile Avenue	Scotland Street
Falcon Gardens	Scotstoun Avenue
Fettes Avenue	Shore Road
Fillyside Road	Silverknowes Eastway
Findlay Gardens	Silverknowes Road
Forrester Park Avenue	Sleigh Drive

Gilmore Place	Society Road
Glencairn Crescent	South Learmonth Gardens
Glendinning Road	South Oswald Road
Glenogle Road	Spylaw Road
Glenvarloch Crescent	St Patrick Street
Goff Avenue	Stanley Road
Gordon Road	Stanley Street
Great Junction Street	Stenhouse Avenue West
Greenbank Crescent	Stevenson Drive (20mph Section)
Greenbank Road	Strachan Road
Greenhill Place	Strathearn Road
Grierson Crescent	Swanston Avenue
Gyle Park Gardens	The Causeway, Duddingston
Gylemuir Road	The Gallolee
Harrison Road	Tipperlin Road
Hermiston	Turnhouse Farm Road
Hermitage Drive	Turnhouse Road
Hermitage Gardens	Wakefield Avenue
Inverleith Place	Walker Street
Inverleith Row	Warriston Road
Inverleith Terrace	Waterloo Place
Joppa Road	Westburn Avenue
Kekewich Avenue	Western Harbour Drive
Kilgraston Road	Westgarth Avenue
Kings Haugh	Whale Brae (Newhaven Road)
King's Road	Whitehouse Loan
Kingsknowe Drive	Whitehouse Road
Kingsknowe Road North	Wilkieston Road
Kirkhill Drive	Woodburn Terrace
Kirkliston Road	Woodside Terrace
Ladywell Road	

Potential Additional Speed Reduction Measures

Signage and additional road markings

The signage requirements for enforceable 20mph limits are set out in the Traffic Signs Regulations and General Directions (TSRGD) 2016. This is national legislation made by the Secretary of State, in consultation with Scottish Ministers in accordance with the Scotland Act 1998. It sets out the design, size and conditions of use for official traffic signs that can be lawfully placed on or near roads and provides the legal framework for signage used in the citywide rollout. These requirements formed the framework for the design and placement of the signage. Given the high concentration of conservation areas within the city, the scheme also sought to avoid unnecessary signage. However, if it is felt by officers that additional signage and other permitted road markings would have a positive impact on speed reduction this will be looked at on a site by site basis.

Vehicle Activated Speed Signs (VASS) Speed Indication Devices (SIDs)

The Council's Road Safety team has mobile VASS which can be calibrated to a 20mph warning. These can be installed where suitable sites and street furniture are available and can be erected for temporary periods (approximately two weeks at a time). Locations will be focussed where traffic surveys have indicated average speeds above an acceptable tolerance. A total of 31 sites have benefitted from this temporary measure. They are a popular and effective means of speed reduction in addressing local concerns. Should the mobile VASS not have the desired effect on speed reduction, depending on the average speeds, permanent SIDs may be erected at suitable locations.

Safety Cameras

Police Scotland is responsible for the delivery and operation of the Scottish Safety Camera Programme, which is funded by Scottish Government via the Scottish Safety Camera Programme Office. The Scottish Safety Camera Programme [Handbook 2015](#) sets out the rules and guidance for the programme in Scotland. This states that the use of safety cameras must be for collision and casualty reduction, as stipulated in the handbook. There are national criteria that require to be satisfied before safety cameras can be considered for installation. The rules contained in the handbook are essential to avoid too many cameras placed at various sites of concern and a consequent reduction in their effectiveness. Officers from the Road Safety team meet with the Programme Office on an annual basis to establish potential safety camera sites.

Physical traffic calming measures

Further physical traffic calming measures will only be considered if there is a significant collision history or high vehicle speeds that have not reduced with soft engineering measures and education campaigns. Various types of physical traffic calming will be considered by officers on a site by site basis. These could include vertical measures such as rumble strips, road humps, speed cushions and speed tables. Possible horizontal measures include build outs/ chicanes, lane width restrictions and entry points treatments. Further measures such as stopping up roads could be considered depending on the nature of the road.

Schools

As part of the implementation programme 34 existing part time 20mph limits were incorporated into the full time 20mph area. Consequently, the signs with flashing lights outside schools signalling the lower speed limit on stretches of 30mph roads were removed, as the part time speed limit was no longer in operation. After implementation a small number of schools raised concerns about the changes and their impact on the speed of traffic. These concerns were investigated and in two areas the speed was found to be higher than the acceptable tolerance and mobile vehicle activated signs were installed as a temporary measure.

The Council's Road Safety and Active Travel Liaison officers work closely with all schools across the city. Should concerns be raised by schools, speed surveys will be undertaken and an assessment will be carried out by the Road Safety team as set out in the aforementioned process. A higher priority will be given to taking additional measures on roads near to schools where there is evidence of higher speeds.