

# Transport and Environment Committee

10.00am, Thursday, 11 November 2021

## City Mobility Plan – Mode Share Targets

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### 1. Recommendations

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- 1.1 Transport and Environment Committee is asked to:
  - 1.1.1 Approve the mode share targets as set out in the appended Technical Note; and
  - 1.1.2 Note that the mode share targets will continue to be reviewed as part of the City Mobility Plan (CMP) review cycle to ensure they are realistic, deliverable and ambitious.

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## City Mobility Plan – Mode Share Targets

### 2. Executive Summary

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- 2.1 Edinburgh has an ambitious agenda for change, including to be net zero carbon by 2030 (supported by an achievement target by the end of 2037).
- 2.2 To help achieve these changes, Edinburgh approved a new 10-year plan for mobility and transport – the City Mobility Plan (CMP) in [February 2021](#). The CMP addresses the challenge of reducing carbon emissions and how people, goods and services move into and around the city. It also addresses air quality, congestion, accessibility and inclusion, cost of travel and convenience of payment, safety and how to create space for people in the city.
- 2.3 The CMP committed to derive mode share targets to help set a level of measurable ambition for actions and decisions which will deliver a shift towards more sustainable travel within the city. The targets, once approved, will form part of the suite of Key Performance Indicators (KPIs) to support the monitoring of the Plan and will be re-examined as part of the Plan’s review cycle to ensure they remain realistic and ambitious. The targets will also help inform proposals for new developments across the city as part of City Plan 2030.
- 2.4 This report seeks approval of the proposed mode share targets, which are based upon planning for a 30% reduction in kilometres (KMs) travelled by car by Edinburgh residents to contribute to the Scottish Government’s target of a national reduction of 20% in car KMs by 2030. The proposed higher target for a 30% reduction in car KMs reflects the city’s ambition to build on existing levels of connectivity and by delivering the measures set out in the CMP over its 10-year lifespan.

### 3. Background

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- 3.1 In December 2020, the Scottish Government published an update to its 2018 Climate Change Plan with targets to reduce emissions by 75% by 2030 and to achieve net zero carbon by 2045. As part of the move towards the reduction in emissions, the updated plan set a target to reduce car KMs driven by 20% by 2030. The updated plan notes that meeting this target will take a cross-sectoral effort going beyond transport, to reduce people's need to travel with more local access to goods and services. Likewise, digital connectivity and flexible working approaches will play a key role.
- 3.2 A Route-Map to achieving the national 20% reduction in car KMs by 2030 is currently being prepared by the Scottish Government and Council officers have requested to be involved in its development. The Route-Map is expected to further inform the support that will be given to help meet this target on a national, regional and local scale.
- 3.3 In addition to the CMP, the Council is progressing several key strategies that are relevant to achieving modal shift. These include the emerging 2030 Climate Strategy; the emerging City Plan 2030 (CP2030); and the recently approved 20-Minute Neighbourhood Strategy: Living Well Locally. The 20-Minute Neighbourhood Strategy is founded on the principle that, where possible, key services and amenities should be accessible within a 10-minute walk of where you live thus reducing the need to make longer car-based trips.
- 3.4 The CP2030 Proposed Plan strategy is centred around the delivery of sustainable development and supports the 20-Minute Neighbourhood Strategy plus a general principle for Edinburgh being a city where citizens do not need to own a car to move around. The mode share targets will support decision-making on new development proposals in line with emerging CP2030.

### 4. Main report

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- 4.1 Mode share relates to the mode of travel used by people when moving from one place to another. The appended Technical Note sets out the proposed mode share targets for consideration. The targets are founded on the baseline evidence available and the Council's ambition to reduce car KMs by 30% by 2030.
- 4.2 In 2019, the Council undertook a citywide travel behaviour survey to better understand how often Edinburgh residents use different modes of travel, how far they travel to work, education and other trips, and by what means. These responses have been used to estimate the total number of trips and distance travelled for residents by purpose and mode of travel thereby providing a 'baseline' from which to measure change from. The methodology used in making these estimations is set out in appended Technical Note.
- 4.3 The proposed baseline (i.e. current mode share) is a snapshot which, whilst representing a useful indication of travel habits, it is not a definitive statement of

exactly how people in Edinburgh were travelling in 2019. Variations across different surveys, such as the 2011 Census and more local surveys such as Sustrans' Edinburgh Bike Life, are to be expected.

- 4.4 In addition, the baseline reflects a situation that will continue to evolve as the move through the COVID-19 pandemic evolves. Current indications are that the amount of homeworking will remain high, with associated reductions in travel to work. Other implications, such as further lifestyle changes, are currently less clear and require continued monitoring.
- 4.5 However, the key is that the percentage level of mode share change is set at an appropriately ambitious level and that the method of analysing travel behaviour is obtained in as consistent a way as possible to enable meaningful comparisons across the Plan's 10-year lifespan.
- 4.6 The mode share targets relate to Edinburgh residents only and not to those commuting into the city from the wider region. The CMP seeks to tackle impacts from those travelling into the city through a range of measures with partners across the city region. Measures include expansion and creation of new regional interchanges, workplace parking levy and parking controls. Exploration of a 'Pay as you Drive' scheme is also noted in the CMP for further consideration to help affect modal shift.
- 4.7 In the city centre, the mode share targets are expected to be exceeded, reflecting the high level of public transport accessibility and planned enhancements supporting walking, wheeling and cycling. The CMP's spatial vision is for a largely car free city centre by 2030, which will be further explored through the next stages of the Edinburgh City Centre Transformation programme.
- 4.8 Despite the pandemic's continuing impact on travel behaviour, the key drivers of the mode share targets remain the same; reducing greenhouse gases, promoting inclusion, reducing poverty, growing a sustainable economy, improving health, making the city much more liveable, and moving towards 'vision zero' etc. These drivers still require the same changes; much less car use and much more walking, cycling and public transport use, facilitated by more liveable streets designed around place, people, and sustainable movement.

## 5. Next Steps

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- 5.1 The mode share targets, once approved, will form part of the suite of Key Performance Indicators (KPIs) to support the monitoring of the CMP and will be re-examined as part of the Plan's review cycle to ensure they remain realistic and ambitious.

## **6. Financial impact**

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- 6.1 The CMP Implementation Plan sets out information known at this stage regarding the main financial impacts of the CMP overall. Further detail on spend for individual projects will be informed by the development of action plans and business cases as appropriate.
- 6.2 It is proposed that a citywide travel behaviour survey will be undertaken to support the monitoring of the CMP in line with its review cycles. Undertaking each survey has a cost in the region of £70,000. External funding to support this will be explored.

## **7. Stakeholder/Community Impact**

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- 7.1 Throughout the development of the CMP, a Strategic Environmental Assessment (SEA) and Integrated Impact Assessment (IIA) have been undertaken, both of which informed its refinement and revision. The mode share targets will form a key part in monitoring the Plan and its commitment to moving towards more sustainable travel across the city.

## **8. Background reading/external references**

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- 8.1 [Edinburgh City Mobility Plan 2021-2030](#) approved 19 February 2021.
- 8.2 [Edinburgh City Plan 2030 – Proposed Plan for Consultation](#), approved 29 September 2021.
- 8.3 [20-Minute Neighbourhood Strategy: Living Well Locally](#), approved 10 June 2021
- 8.4 [2030 Climate Strategy – Draft for Consultation](#), approved 10 June 2021
- 8.5 [National Transport Strategy 2](#) published by Transport Scotland, 5 February 2020.
- 8.6 [Update to the Climate Change Plan 2018 – 2032](#) published by the Scottish Government, 16 December 2020.

## **9. Appendices**

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- 9.1 Appendix 1 – Mode Share Targets: Technical Note

## Appendix 1 - Mode Share Estimates and Targets for 2030: Technical Note

### Executive Summary

The City Mobility Plan (CMP / 'the Plan') committed to derive mode share targets to provide a detailed understanding of the potential for more people to travel sustainably around the city. The aim of these targets is to help set a level of measurable ambition for actions and decisions which will deliver a shift towards greater sustainable travel. The targets will be one of a suite of Key Performance Indicators (KPIs) to support the monitoring of the Plan and will be re-examined as part of its review cycle to ensure they remain realistic and ambitious. The targets will also help inform proposals for new developments across the city as part of City Plan 2030.

The proposed mode share targets are based upon planning for a 30% reduction in kilometres (KMs) travelled by car by Edinburgh residents to contribute to Scottish Government's target of a national reduction of 20% in car kms by 2030. The proposed higher target for a 30% reduction in car KMs reflects the city's ambition to build on existing levels of connectivity by delivering the measures set out in the CMP over its 10-year lifespan.

Summary Table A details the change in the number of trips by mode required to reduce car kms by 30% by 2030. Summary Table B shows the mode share targets that would result in the required changes to the number of trips by mode.

**Summary Table A: Required change in trips and distance travelled to reduce car KMs by 30% by 2030**

	Change in Kms Travelled per week	% Change	Change in trips made per week	% Change
<b>Car</b>	-7,994,000	-30%	-613,400	-32%
<b>Walking</b>	223,000	3%	94,900	3%
<b>Cycle</b>	924,000	35%	220,100	53%
<b>Bus/Tram</b>	6,338,000	26%	277,100	8%
<b>Rail</b>	510,000	12%	21,300	13%

**Summary Table B: Mode share targets to effect 30% reduction in car KMs by 2030**

Mode share	All Trips		Trips to Work		Trips to Education		Other trips	
	Current	Target	Current	Target	Current	Target	Current	Target
Car	21%	14%	34%	24%	5%	3%	17%	11%
Walking	36%	37%	18%	20%	32%	32%	43%	44%
Cycle	4%	7%	5%	9%	6%	7%	4%	6%
Bus/Tram	37%	40%	42%	47%	56%	57%	34%	37%
Rail	2%	2%	1%	1%	1%	1%	2%	2%

## Background

### City Mobility Plan

The City Mobility Plan 2021 – 2030 was approved by Transport and Environment Committee on 19 February 2021. The Plan was prepared alongside the emerging City Plan 2030 to help Edinburgh connect through a safer and more inclusive carbon neutral transport system - delivering a healthier, thriving, fairer and compact capital city and a higher quality of life for all residents. The Plan is intended to improve health, wellbeing, equality and inclusion; to support inclusive and sustainable economic growth and respond to climate change; and to protect and enhance our environment. To help achieve this, key objectives of the Plan include:

- Encourage behaviour change to support the use of sustainable travel modes;
- Increase the proportion of trips people make by active and sustainable travel modes;
- Reduce harmful emissions from road transport;
- Reduce the need to travel and distances travelled; and
- Reduce vehicular dominance and improve the quality of our streets.

Based upon survey data, CMP sets out how Edinburgh's residents are travelling to work, education and for other trips such as shopping and leisure. The CMP committed to derive mode share targets to provide a detailed understanding of the potential for more people to travel sustainably around the city. These targets are intended to support the monitoring of the CMP and will help inform proposals for new developments across the city as part of City Plan 2030.

### Scottish Government Climate Change Plan

In December 2020, Scottish Government published an [update to its 2018 Climate Change Plan](#) with ambitious targets to end Scotland's contribution to climate change by 2045. The update commits to reduce emissions from the 1990 level by 75% by 2030 and to achieve net zero by 2045. As part of the move towards the reduction in emissions, the updated plan sets a target to reduce car KMs driven by 20% by 2030. The mode share targets set out in this technical note are based upon the changes to travel behaviour necessary to reduce car KMs by Edinburgh's residents by at least 30%.

### Establishing a Baseline to Understand and Measure Travel Behaviour

Between September and December 2019, nearly 5,200 of Edinburgh's residents were surveyed with the objectives of:

- Understanding current travel and transport behaviour among residents of Edinburgh;
- Understanding motivations and barriers to switching to more sustainable transport choices; and
- Establishing baseline measures to be monitored via future waves of the Edinburgh People Survey (EPS)

The surveys were conducted on street and in resident's home and were spread evenly between the 17 Council electoral wards. To provide a representative sample of Edinburgh residents, quotas were set on age, gender, ethnicity and working status. The sampling and method of survey was replicated to match the Edinburgh people survey to ensure data comparability.

The results of the Travel Behaviour Survey have been used to estimate mode and distance travelled by Edinburgh's population for trips to work, trips to education and other trips such as for shopping and leisure.

The 2019 Travel Behaviour Survey baseline is a snapshot which, whilst representing a useful indication of travel habits, and a base against which changes can be measured if a similar survey is repeated, is not a definitive statement of exactly how people in Edinburgh were travelling in 2019. It needs to be viewed alongside other evidence, for example, the 2011 and upcoming 2022 censuses, Scottish Household Survey results, other surveys such as that carried out for the 'Bikelife' reports. Road and path-side counters also play a role in helping to inform our understanding of travel behaviours; however this latter method is less effective as it cannot determine who is making the trip, trip purpose or points of origin/destination.

For example, Bike Life reported that 8% of the city's residents' cycle to work or for education, which is higher than that reported for the Citywide Travel Behaviour Survey and the Scottish Household Survey. Variations like this are to be expected, however the key is that the percentage level of change is set at an appropriately ambitious level and that the method of analysing travel behaviour is obtained in a consistent manner as possible to enable more meaningful comparisons across the Plan's 10 year lifespan.

In addition, the baseline reflects a situation that will inevitably evolve following the COVID-19 pandemic. Current indications are that the amount of homeworking will increase significantly, with associated reductions in travel to work, but with other implications that are currently less clear such as lifestyle changes.

Despite COVID-19, the key drivers of the targets remain the same, reducing greenhouse gases, promoting inclusion and a sustainable economy, improving health, making the city much more liveable, and moving towards 'vision zero'. These still require the same changes; much less car use and much more walking, cycling and public transport use, facilitated by more liveable streets designed around place, people, and sustainable movement.



## Mode Share

Mode share relates to the mode of transport used by people when travelling. The 2011 census collected comprehensive information on how people travel to work and education and other national surveys, such as the Scottish Household Survey, has collected information on other travel behaviour, though due to sample size of the survey, the results are not easily useable at small area level.

Mode share is traditionally considered in terms of the proportion of a population using different modes of a transport for a set purpose. However, this definition does not account for the frequency of mode use or the distance travelled. The proportion of all trips made by a particular mode of transport is very different from the share of KMs travelled by mode of transport with Active travel trips (walking/wheeling and cycling) tending to be shorter than trips made by motorised transport.

The 2019 Citywide Travel Behaviour Survey asked respondents how often they use different modes of transport, how far they travel to work and education and by what means. The survey responses have been used to estimate the total number of trips and distance travelled for Edinburgh residents by purpose and mode of transport. The methodology used in making these estimations is set out in the methodology section of this report. Table 1 shows the average trip distance, by mode, for travel to work or education.

**Table 1. Trip Distance by Mode (KMs) for travel to work or education**

<b>Mode</b>	<b>Average (mean) trip distance - KMs</b>
Car (Driver)	13.8
Walking	2.4
Bicycle	6.3
Bus	7.0
Rail	28.2
All modes	11.7

Table 2 shows the mode share of all trips being made by Edinburgh residents and Table 3 shows the mode share in terms of the KMs travelled.

**Table 2. Mode share of trips made by Edinburgh residents (trips per week)**

	All Trips		Trips to Work		Trips to Education		Trips Other	
Current	Trips	Mode share	Trips	Mode share	Trips	Mode share	Trips	Mode share
Car	1,927,900	21%	787,600	34%	22,100	5%	1,118,100	17%
Walking	3,390,400	36%	410,100	18%	131,600	32%	2,848,800	43%
Cycle	412,900	4%	108,500	5%	26,300	6%	278,100	4%
Bus/Tram	3,460,800	37%	957,300	42%	233,200	56%	2,270,300	34%
Rail	158,700	2%	24,100	1%	3,600	1%	131,000	2%
<i>Total Trips</i>	<i>9,350,600</i>		<i>2,287,600</i>		<i>416,800</i>		<i>6,646,200</i>	

**Table 3. Mode share of KMs travelled by Edinburgh residents (distance travelled per week)**

	All Trips		Trips to Work		Trips to Education		Trips Other	
Current	1,000s Kms Travelled	Mode share	1,000s Kms Travelled	Mode share	1,000s Kms Travelled	Mode share	1,000s Kms Travelled	Mode share
Car	26,647	40%	11,060	54%	170	8%	15,417	35%
Walking	8,299	13%	1,046	5%	289	13%	6,965	16%
Cycle	2,610	4%	744	4%	120	6%	1,746	4%
Bus/Tram	24,124	37%	6,779	33%	1,533	71%	15,812	36%
Rail	4,412	7%	679	3%	40	2%	3,694	8%
	66,092		20,308		2,152		43,633	

The tables indicate that whilst walking accounts for a very high proportion of all trips being made each week, as the trips tend to be relatively short, they account for a relatively small proportion of the KMS travelled. Conversely, car trips only account for around 20% of all trips being made but in terms of the KMs travelled, the proportion is almost double. Bus/Tram is the most popular mode of travel overall for Edinburgh residents both in terms of the number of trips and the distance travelled.

## Mode Share Targets

The CMP committed to derive mode share targets to provide a detailed understanding of the potential for more people to travel sustainably around the city. These targets are intended to support the monitoring of the CMP and will help inform proposals for new developments across the city as part of City Plan 2030.

In accordance with CMP objectives and the Scottish Government's Climate Change Plan, the targets for mode share have been derived with the aim of reducing the amount of travel by car by increasing trips made using active travel modes and greater use of public transport for longer trips. Mode share targets is one of a suite of Key Performance Indicators (KPIs) set by the CMP to allow the Council to measure the success of delivering the package of measures in the CMP, and to set a level of ambition to help direct actions and decisions which will deliver a shift towards more sustainable travel.

As part of its Climate Change Plan, the Scottish Government is seeking a 20% reduction in car trips (in terms of distance travelled) by 2030. In order to meet this objective, it is likely that car travel to, from and within the large urban areas of Scotland will need to be reduced by more than 20%. To that end, the mode share targets proposed, are based upon the premise of reducing the distance of car trips made by Edinburgh residents by 30%.

### Target Assumptions

The targets have been derived under the assumption that half of all short trips (trips under 3.2KMs or 2 miles) that are currently made by car could be moved to active travel modes and a quarter of intermediate trips (3.2 to 8 KMs) could likewise be made using active travel modes. Of those trips moved from car to active travel, half of short trips are targeted to become cycling trips and half walking. Trips of 3.2 to 8 KMs are less likely to be made by walking and the assumption is that 90% of the intermediate trips moved from car would be to cycling with 10% to walking.

It is unlikely that significant numbers of trips of over 8 KMs could be moved from car to active travel modes and so, the remainder of the 30% reduction in car KMs is targeted to move trips from car to public transport. The distribution of trips moved from car to bus/tram and rail is assumed to be the same distribution as the share of trips currently being made by these modes.

Table 4 shows the target change in trips made and distance travelled by each mode required to reduce car KMs by 30%.

**Table 4. Target change in average weekly KMs travelled and trips made**

	<b>Change in Kms Travelled per week</b>	<b>% Change</b>	<b>Change in trips made per week</b>	<b>% Change</b>
<b>Car</b>	-7,994,000	-30%	-613,400	-32%
<b>Walking</b>	223,000	3%	94,900	3%
<b>Cycle</b>	924,000	35%	220,100	53%
<b>Bus/Tram</b>	6,338,000	26%	277,100	8%
<b>Rail</b>	510,000	12%	21,300	13%

### Targets

Tables 5 and 6 show the resulting mode share targets, by purpose of journey, that are required to reduce car KMs travelled by Edinburgh residents by 30%. Table 5 shows the targets in terms of the KMs travelled per week and Table 6 shows the target mode share in terms of trips made per week.

**Table 5. Mode share targets: KMs travelled per week by mode of travel**

	All Trips		Trips to Work		Trips to Education		Trips Other	
Current	Kms Travelled	Mode share	Kms Travelled	Mode share	Kms Travelled	Mode share	Kms Travelled	Mode share
Car	26,647,000	40%	11,060,000	54%	170,000	8%	15,417,000	35%
Walking	8,299,000	13%	1,046,000	5%	289,000	13%	6,965,000	16%
Cycle	2,610,000	4%	744,000	4%	120,000	6%	1,746,000	4%
Bus/Tram	24,124,000	37%	6,779,000	33%	1,533,000	71%	15,812,000	36%
Rail	4,412,000	7%	679,000	3%	40,000	2%	3,694,000	8%
	66,092,000		20,308,000		2,152,000		43,633,000	
Target	Kms Travelled	Mode share	Kms Travelled	Mode share	Kms Travelled	Mode share	Kms Travelled	Mode share
Car	18,653,000	28%	7,740,000	38%	118,000	5%	10,796,000	25%
Walking	8,521,000	13%	1,139,000	6%	293,000	14%	7,089,000	16%
Cycle	3,533,000	5%	1,126,000	6%	131,000	6%	2,277,000	5%
Bus/Tram	30,462,000	46%	9,399,000	46%	1,569,000	73%	19,495,000	45%
Rail	4,922,000	7%	904,000	4%	41,000	2%	3,977,000	9%
	66,092,000		20,308,000		2,152,000		43,633,000	
Change in KMs travelled	Kms Travelled	% Change	Kms Travelled	% Change	Kms Travelled	% Change	Kms Travelled	% Change
Car	-7,994,000	-30%	-3,320,000	-30%	-53,000	-31%	-4,621,000	-30%
Walking	223,000	3%	94,000	9%	4,000	2%	124,000	2%
Cycle	924,000	35%	382,000	51%	11,000	9%	531,000	30%
Bus/Tram	6,338,000	26%	2,620,000	39%	36,000	2%	3,683,000	23%
Rail	510,000	12%	225,000	33%	2,000	4%	283,000	8%

**Table 6. Mode share targets: Trips made per week by mode of travel**

	All Trips		Trips to Work		Trips to Education		Trips Other	
Current	Trips	Mode share	Trips	Mode share	Trips	Mode share	Trips	Mode share
Car	1,927,900	21%	787,600	34%	22,100	5%	1,118,100	17%
Walking	3,390,400	36%	410,100	18%	131,600	32%	2,848,800	43%
Cycle	412,900	4%	108,500	5%	26,300	6%	278,100	4%
Bus/Tram	3,460,800	37%	957,300	42%	233,200	56%	2,270,300	34%
Rail	158,700	2%	24,100	1%	3,600	1%	131,000	2%
	9,350,600		2,287,600		416,800		6,646,200	
Target	Trips	Mode share	Trips	Mode share	Trips	Mode share	Trips	Mode share
Car	1,314,400	14%	537,700	24%	14,400	3%	762,400	11%
Walking	3,485,300	37%	448,100	20%	133,400	32%	2,903,800	44%
Cycle	633,000	7%	197,900	9%	29,300	7%	405,700	6%
Bus/Tram	3,737,900	40%	1,071,000	47%	235,900	57%	2,431,000	37%
Rail	180,000	2%	32,800	1%	3,800	1%	143,300	2%
	9,350,600		2,287,600		416,800		6,646,200	
Change in number of Trips	Trips	% Change	Trips	% Change	Trips	% Change	Trips	% Change
Car	-613,400	-32%	-249,900	-32%	-7,800	-35%	-355,800	-32%
Walking	94,900	3%	38,000	9%	1,900	1%	55,100	2%
Cycle	220,100	53%	89,400	82%	3,000	11%	127,700	46%
Bus/Tram	277,100	8%	113,700	12%	2,700	1%	160,700	7%
Rail	21,300	13%	8,700	36%	200	6%	12,400	9%

## Setting Mode Share Targets: Methodology

### Stage 1. Calculate total number of trips of by mode

The 2019 Citywide Travel Behaviour Survey asked respondents how often they had used different modes of transport over the last month. This information was used to estimate the number of trips being made using different transport modes for Edinburgh's population. Table 7 sets out the assumed trips per week according to respondent's answer to the question. As trips tend to be to a destination and then a return home, a response indicating 1 trip per week is assumed to be 2 trips in total (there and back) when calculating trips and kms travelled. A response to trips being made several times per week or most days may indicate more than a single trip per day. For example, the respondent may make a regular trip to work and make another local trip on the same day. This is less likely for people using rail. To reflect this, fewer rail trips per week are assumed than other modes for respondents indicating that they use the mode most days or several times per week.

**Table 7. Assumed trips per week.**

<b>Response</b>	<b>Assumed trips per week</b>	<b>Assumed trips per week - Rail</b>
About once a fortnight	1	1
About once a month	0.5	0.5
About once a week	2	2
Most days	14	10
Not used in last month	0	0
Several times a week	10	8

The analysis of responses was carried out for four different age groups – 16 to 24 year olds, 25 to 44 year olds, 45 to 64 year olds and those aged 65 and over. The proportion of respondents in each group making the number of trips was applied to Edinburgh's population estimate for that age group to estimate the total number of trips being made by all of Edinburgh's residents.

### Stage 2. Calculate the number of travel to work/education trips

Specific questions were asked in the survey about travel to work and education including the mode of travel and the distance travelled. The analysis for travel to work was carried out for the 4 age groups and was further broken down by employment status (working full time, part time, or self-employed). The number of self-employed respondents was estimated between full time workers and part time workers using census data. It was assumed that full time workers would make 5 trips to work per week and part time workers would make 3 to 4 trips to work per week. Trips to education were assumed to be at a rate for 5 trips week. As with total trips, the pattern of trips to work for the survey respondents was applied to the total population of each age/employment status group to estimate trips to work and education for the whole population.

### Stage 3. Calculate number of other trips

No further information was available from the survey regarding non-work/education trips. ‘Other trips’ were calculated as the residual of all trips (calculated in stage 1) minus trips to work and education (calculated in stage 2). Table 8 sets out the mode share of all trips, broken down by purpose. The mode share table is based upon the mode share of the **number of trips** being made, not the more usual split based upon the number of individuals using a particular mode i.e. mode share by trips gives weight to how often a trip is made per week.

**Table 8: Mode share of trips – current position**

	<b>All Trips (per week)</b>	<b>Trips to Work</b>	<b>Trips to Education</b>	<b>Other trips</b>
<b>Number of trips</b>				
Car	1,927,900	787,600	22,100	1,118,100
Walking	3,390,400	410,100	131,600	2,848,800
Cycle	412,900	108,500	26,300	278,100
Bus/Tram	3,460,800	957,300	233,200	2,270,300
Rail	158,700	24,100	3,600	131,000
<b>Total Trips</b>	<b>9,350,600</b>	<b>2,287,600</b>	<b>416,800</b>	<b>6,646,200</b>
<b>Mode share</b>				
Car	21%	34%	5%	17%
Walking	36%	18%	32%	43%
Cycle	4%	5%	6%	4%
Bus/Tram	37%	42%	56%	34%
Rail	2%	1%	1%	2%

### Stage 4. Calculate the number of Car KMs.

As the mode share targets are to be based upon reducing the number of car-KMs, it is necessary to estimate the distance of the trips in Table 8 above.

For trips to work and education, the trip distances from the 2019 Citywide Travel Behaviour Survey were used to calculate total KMs for each mode. The question in the survey used distance brackets, and the mid-point of each range was used to estimate trip distance. The highest bracket used in the survey was travel of over 10 miles. As the longer trips have the greatest influence on total distance travelled, this bracket was broken down into sub-brackets based on the proportions observed in the 2011 Census. The brackets and assumed average trip distances are set out in Table 9 below. The survey did not collect information on distances for other trips. The average distance for trips to work or education was, therefore, applied for each mode. The average distance by mode for all trips to work or education is set out in Table 10. The estimated total KMs travelled by each mode and purpose is shown in Table 11.



**Table 9. Assumed trip distance based upon survey response**

<b>Survey Response</b>	<b>Assumed average trip distance (miles)</b>	<b>Assumed average trip distance (KM)</b>
<b>Distance travelled to Work/Education</b>		
Less than a mile	0.5	0.8
More than a mile but less than 2 miles	1.5	2.4
More than 2 miles but less than 5 miles	3.5	5.6
More than 5 miles but less than 10 miles	7.5	12
More than 10 miles (from Census)		
10 to 12 miles	11	17.6
12 to 18 miles	15	25
18 to 25 miles	21.5	35
25 to 38 miles	31.5	50
38+ miles	40	60

**Table 10. Average (mean) distance travelled for all trips to work or education**

<b>Mode</b>	<b>Average (mean) trip distance - KMs</b>
Car (Driver)	13.8
Walking	2.4
Bicycle	6.3
Bus	7.0
Rail	28.2
All modes	11.7

**Table 11. Estimated KMs travelled per week by mode and purpose**

	<b>All Trips</b>	<b>Trips to Work</b>	<b>Trips to Education</b>	<b>Other Trips</b>
<b>Mode</b>				
Car	26,647,000	11,060,000	170,000	15,417,000
Walking	8,299,000	1,046,000	289,000	6,965,000
Cycle	2,610,000	744,000	120,000	1,746,000
Bus/Tram	24,124,000	6,779,000	1,533,000	15,812,000
Rail	4,412,000	679,000	40,000	3,694,000
<b>All Modes</b>	<b>66,092,000</b>	<b>20,308,000</b>	<b>2,152,000</b>	<b>43,633,000</b>

**Stage 5. Calculate the number of car trips that must be moved to other modes to achieve 30% reduction in Car-KMs.**

An estimate of the total distance travelled by car was calculated in stage 4. 30% of this figure is the reduction in car KMs required, which could be achieved in different ways. Moving short or local trips by car to other modes would require more trips to be changed than moving longer trips as longer trips account for more car-KMs. The model assumes 50% of trips below 3.2 KMs could be moved from car to active travel modes and 25% of trips between 3.2 and 8 KMs could likewise be moved. The remaining reduction in car KMs must come from a shift of longer car trips to public transport modes. For the trips moving to public transport, the split between bus/tram and rail in each distance bracket is made on a pro-rata basis according to current travel behaviour.

First, the car KM reduction achieved from local moves is calculated as the number of local trips to be moved multiplied by the average local trip distance. Local trips (<3.2 KMs) is the product of two distance brackets in the survey (up to 1.6 KMs and 1.6 to 3.2 KMs) and the KM reduction was calculated for each sub-bracket separately. The remaining required KM reduction is then calculated as the total reduction in distance required minus the reduction achieved from local trip moves. This residual is then used to calculate the number of longer trips in each bracket that need to change mode, based upon average trip distance. The above calculations were performed for each trip purpose.

**Stage 6. Move the reduction in car trips to other modes**

The model assumes that the same number of trips will be made overall, so any reduction in car trips must be balanced by moves to other modes. The model distributes short trips moved from car to active travel as 50% to cycling and 50% to walking. Intermediate trips are moved at a ratio of 9:1 cycling to walking. For longer trips, the reduction in car trips is balanced by an increase in bus and rail trips distributed according to survey observed behaviour. Table 12 shows the number of trips moved between mode and Table 13 shows the resulting mode share split

**Table 12. Modal change**

<b>Reduction in car trips (all)</b>	<b>Reduction in car trips</b>	<b>To walking</b>	<b>To cycling</b>	<b>To Bus</b>	<b>To Train</b>
Local trips (<3.2KMs)	158,600	79,300	79,300		
Intermediate trips (3.2 - 8KMs)	156,500	15,600	140,800		
Long Trips (8+ KMs)	298,400			277,100	21,300
<b>All trips</b>	<b>613,400</b>	<b>94,900</b>	<b>220,100</b>	<b>277,100</b>	<b>21,300</b>
<b>Reduction in car trips to work</b>	<b>Reduction in car trips</b>	<b>To walking</b>	<b>To cycling</b>	<b>To Bus</b>	<b>To Train</b>
Local trips	63,100	31,600	31,600		
Intermediate trips	64,300	6,400	57,900		
Long Trips	122,500			113,700	8,700
<b>All trips</b>	<b>249,900</b>	<b>38,000</b>	<b>89,400</b>	<b>113,700</b>	<b>8,700</b>
<b>Reduction in car trips to Education</b>	<b>Reduction in car trips</b>	<b>To walking</b>	<b>To cycling</b>	<b>To Bus</b>	<b>To Train</b>
Local trips	3,500	1,700	1,700		
Intermediate trips	1,400	100	1,300		
Long Trips	2,900			2,700	200
<b>All trips</b>	<b>7,800</b>	<b>1,900</b>	<b>3,000</b>	<b>2,700</b>	<b>200</b>
<b>Reduction in other car trips</b>	<b>Reduction in car trips</b>	<b>To walking</b>	<b>To cycling</b>	<b>To Bus</b>	<b>To Train</b>
Local trips	92,000	46,000	46,000		
Intermediate trips	90,800	9,100	81,700		
Long Trips	173,100			160,700	12,400
<b>All trips</b>	<b>355,800</b>	<b>55,100</b>	<b>127,700</b>	<b>160,700</b>	<b>12,400</b>

**Table 13. Target trips by mode and mode share**

	<b>All Trips</b>	<b>Trips to Work</b>	<b>Trips to Education</b>	<b>Trips Other</b>
Car	1,314,400	537,700	14,400	762,400
Walking	3,485,300	448,100	133,400	2,903,800
Cycle	633,000	197,900	29,300	405,700
Bus/Tram	3,737,900	1,071,000	235,900	2,431,000
Rail	180,000	32,800	3,800	143,300
<i>All Trips</i>	<i>9,350,600</i>	<i>2,287,600</i>	<i>416,800</i>	<i>6,646,200</i>
<b>Mode Share</b>				
Car	14%	24%	3%	11%
Walking	37%	20%	32%	44%
Cycle	7%	9%	7%	6%
Bus/Tram	40%	47%	57%	37%
Rail	2%	1%	1%	2%

A comparison of current mode share, by number of trips, to the target mode share is shown in table 14.

**Table 14. Current and target mode share by number of trips**

<b>Mode share</b>	<b>All Trips</b>		<b>Trips to Work</b>		<b>Trips to Education</b>		<b>Other trips</b>	
	<b>Current</b>	<b>Target</b>	<b>Current</b>	<b>Target</b>	<b>Current</b>	<b>Target</b>	<b>Current</b>	<b>Target</b>
Car	<b>21%</b>	<b>14%</b>	34%	24%	5%	3%	17%	11%
Walking	<b>36%</b>	<b>37%</b>	18%	20%	32%	32%	43%	44%
Cycle	<b>4%</b>	<b>7%</b>	5%	9%	6%	7%	4%	6%
Bus/Tram	<b>37%</b>	<b>40%</b>	42%	47%	56%	57%	34%	37%
Rail	<b>2%</b>	<b>2%</b>	1%	1%	1%	1%	2%	2%