



Bike Life Scotland 2018

Data sources and methodologies

Where does the data in the 2018 Bike Life reports come from?

The three 2018 Bike Life Scotland reports were produced by Sustrans with the support and co-operation of the authorities named on the report front covers. The three cities are Glasgow, Perth and Stirling.

The data contained in the reports is drawn from a set of common data reviewed and agreed by Sustrans and the three authorities and collected for every one of the cities. There are four categories of data:

- **Settings data:** these are supply-side measures of what is available to help someone riding a bike in the city, and the inputs being made. This includes cycle route lengths, 20mph limits and cycle parking.
- **Behaviour data:** these are demand-side measures of residents' travel behaviours, the types of people owning and riding bikes, how often, how far and to which types of destination.
- **Perception data:** attitudes and perceptions of the public towards bikes and transport more generally. This includes awareness of facilities for cycling, their perception of how good those facilities are locally, their views on safety for all ways of getting around the city, the potential for them to ride a bike more, whether they think use of bikes helps make a better place, and what else should be done to facilitate more and safer cycling. Perceptions, whether accurate or not, substantially determine whether people may ride a bike. For this reason the perceptions of those who don't ride are as important as those that do.
- **Impacts data:** health, economic and environmental benefits from cycle use, including modelled economic benefits, premature deaths prevented, impacts for the NHS and reductions in pollutants where bikes are used instead of cars.

The settings data and some of the behavioural data were supplied by partner authorities. The perception data and the rest of the behavioural data was obtained from an independent survey of a sample of respondents, representative of adults in each city, conducted by ICM Unlimited (part of Walnut Unlimited, henceforth ICM Unlimited). The impacts data was calculated by Sustrans' Research and Monitoring Unit from a combination of the behavioural data and the best available evidence.

The survey by ICM Unlimited interviewed a representative sample of 1,100 respondents aged 16 and above in each of the three cities. Interview quotas were set by gender, age, work status and ethnicity to reflect the profile of each city. In addition, 100 booster interviews were conducted with bike riders in each city (defined as those who have cycled in the last four weeks), to ensure a more statistically robust measure of bike riders' views about facilities. The results of booster interviews are not included in items of data

covering the views or behaviours of the whole population. In other words, data on the views and behaviours of the whole population are representative; they do not include a disproportionate number of cyclists.

2018 fieldwork was carried out between 4th May and 4th July 2018 and the average interview length was 15 minutes. All interviews in Glasgow were conducted by telephone using random digit dialling combined with quotas to ensure robust data, and the sample included an 85% landline - 15% mobile split. Due to the low populations of Perth and Stirling, face-to-face interviews were conducted using grouped outputs areas combined with quotas. All the main sample interviews in Perth and Stirling were conducted in-home, with the cyclist boosters conducted in-street.

At the analysis stage, the data were weighted by age, gender, working status and ethnicity using mid-year population estimates based on 2011 Census data. In addition, in Glasgow, data are weighted by ward.

Data for each section of the report came from the sources listed below

Page	Section	Data item	Source and notes
Page 1 Forward motion: Our vision for cycling in the city	Forward motion	Various data, depending on each individual city report	Figures come from data sourced throughout in the Bike Life report, except: Glasgow: cyclist counts and change in cycling levels. Data provided by partner authority.
Page 2 This is a summary of data found across the report.	There are substantial benefits to the city from people cycling	Trips made by bike in the past year	See page 7
		Saving to the NHS to pay for nurses	See page 8
		Daily number of cars taken off the roads, equivalent to a tailback	See page 8: "Number of return cycle trips are made daily in city by people that could have used a car"
		Economic benefit to city from people riding bikes for transport and leisure	See page 7

	There is huge potential for more people to ride bikes...	Percentage of residents usually cycling to and from work	See page 4
		Percentage of households within 125m of a cycle route	See page 3
		Percentage of people who do not currently ride a bike, but would like to	See page 12
		Percentage of people that think cycling safety is good	See page 11
	...and public support to make that happen	Percentage of people that say their city would be a better place to live and work if more people cycled	See page 12
		Percentage of people who would like to see more money spent on cycling	See page 13
		Percentage of people who would find protected roadside cycle lanes very useful to help them cycle more	See page 13
		Percentage of residents who support building more protected roadside cycle lanes, even when this could mean less space for other road traffic	See page 13
Page 3 Key figures: Provision and levels of cycling in the city	Bike ownership in city	Percentage of people living in households with at least one bike	ICM survey.
		Percentage of people living in households with children, with at least one child's bike	ICM survey.
		Adult bike ownership	ICM survey.

			Bicycle ownership figures refer to the percentages of people that live in a household with the given number of cars or bikes. Note that Census data on car ownership is normally reported differently, as the percentage of households with each given number of cars.
		Car and adult bike ownership	ICM survey. Car and bicycle ownership figures refer to the percentages of people that live in a household with the given number of cars or bikes. On the chart, "cars" refers to cars or vans.
What's available and who's aware?		Miles of cycle routes	All information supplied by the relevant authority (as shown on the front cover). This includes all surfaced routes where you can legally ride a bike and/or enjoy some separation from general motor traffic: shared use footways, on road painted cycle lanes, bus lanes you can cycle in, traffic free cycle routes away from the highway, and cycle tracks within the highway physically separated from traffic and pedestrians. It excludes sections of cycle route that are merely signposted along roads without any special facility for cycling.
		Miles of routes physically separated from vehicles	Includes protected bike lanes, shared footways and traffic-free routes away from roads.
		Percentage of people who are familiar with the traffic-free routes	ICM survey. 'People' refers to the representative sample of 1,100 residents, aged 16 or above.
		Percentage of households within 125 metres of a cycle route	Calculated by Sustrans from data provided by the authority. Based on all routes included in the calculation of total route length and the most recent Marker Map postcode data. This dataset contains household counts for each postcode. Person count data is also available at postcode level and has been used for previous Bike Life projects however the only dataset available is from 2011. Household count data was last updated in 2018.
		Percentage of all streets having a 20mph speed limit	Data supplied by partner authority. This is the percentage of the total street length to which a 20 mph limit applies, not the percentage of named streets that are 20 mph.
		Number of public bike parking spaces...	Including all public bike parking available to the general public. Excludes parking at workplaces, educational establishments and railway stations that are for exclusive or preferential use by people at those establishments. Count provided by partner authority.
		... equivalent to X bike riders per space	This is the number of people saying they had ridden a bike in the four weeks before the survey, scaled up to the whole 16+ population of the city, and divided by the number of public bike parking spaces.

		Railway and metro station parking spaces for bikes	The number of cycle parking spaces available for preferential use by rail passengers, at all stations within the boundary of the area covered by Bike Life, and including stands, lockers and any other types of dedicated cycle parking. It excludes cycle parking that is outside stations, is available for everybody to use and is therefore public parking i.e. to which railway passengers have no preferential access. Within Glasgow, metro stations are included in the calculations.
		Equivalent daily average number of rail passengers for each bike parking space	This is calculated using the sum of the daily average number of passengers using each railway station in the city area covered by Bike Life. Strictly speaking it is the number of passenger movements: if the same person makes two or more trips, each trip counts once. <ul style="list-style-type: none"> Each station 'entry' or 'boarding' is counted once. Therefore if the number of spaces per passenger were 1, this would be equivalent to every passenger being able to park a bike at one end of their trip. For people making return journeys to and from stations that are both within the city area, this would allow for parking a bike at both ends. The source is the annual number of entries to a station listed by the Office of Rail and Road (ORR). Within Glasgow, metro stations are included in the calculations.
Page 4	Who is cycling?	Percentage of city residents by age band	For age, the division of city residents uses 2016 mid-year population estimates.
		Percentage of bike riders by age band	ICM survey. This is the percentage falling into each age group of people who said they had ridden a bike in the past four weeks when the survey was conducted
		Percentage of city residents by gender	For gender, the division of city residents uses 2016 mid-year population estimates.
		Percentage of bike riders by gender	ICM survey. This is the percentage of people who said they had ridden a bike in the past four weeks when the survey was conducted who are each gender. Please note the 2018 Bike Life survey also provided response categories: 'In another way' and 'Prefer not to say'.
		Percentage of city residents by ethnicity	For ethnicity, the division of city residents uses the 2011 Census.
		Percentage of bike riders by ethnicity	ICM survey. This is the percentage of people who said they had ridden a bike in the past four weeks when the survey was conducted who are white or BME ethnicity.
	How often are people riding a bike?	Frequency of riding a bike	ICM survey. This is the frequency distribution of riding a bike, from responses to the survey. It shows the percentages of people claiming to cycle at each frequency.

	Where are people cycling?	Number of cycle trips to work	The number of cycle trips for each purpose is estimated from the responses to the 2018 ICM survey questions, asking respondents who cycle to work how often they cycle to work. This is scaled up for the whole adult population. The calculations include a correction for seasonal variation: using Sustrans' database of average seasonal variation in cycling from a large number of automatic counters over many years, enables us to correct with confidence for the relatively high levels of cycling likely to be exhibited during the survey period of May to July.
		Number of cycle trips to college or university	The number of cycle trips to college or university is estimated from the responses to the 2018 ICM survey questions, asking respondents who cycle to college or university how often they cycle to college or university. This is scaled up for the population. The calculations include a correction for seasonal variation, as above.
		Number of cycle trips to school	The number of cycle trips to school is estimated using 2017 Hands Up Survey Scotland data, which provided the median proportion of pupils who cycle to school in the Bike Life boundary area. This is scaled up for the school roll number. It was assumed that these pupils cycle to/from school on every school day.
		Number of cycle trips for shopping and other purposeful trips	The number of cycle trips for shopping and other purposeful trips is estimated from the responses to the 2018 ICM survey questions, asking respondents who cycle for other purposeful trips such as shopping how often they cycle for other purposeful trips such as shopping. This is scaled up for the population. The calculations include a correction for seasonal variation, as above.
		Number of cycle trips for leisure	The number of cycle trips for leisure is estimated from the responses to the 2018 ICM survey questions, asking respondents who cycle exclusively for enjoyment or fitness how often they cycle exclusively for enjoyment or fitness. This is scaled up for the population. The calculations include a correction for seasonal variation, as above. Child leisure trips are estimated from the adult leisure trip estimate using Census 2011 data about the proportion of childless households in each city.
		Percentage of city residents who usually cycle to and from work	The percentage of adult residents aged 16+, calculated from responses to ICM survey.
		Percentage of city residents' cycle trips for work or education	The number of cycle trips to work, college or university, and school, as a percentage of the total number of trips cycled.
Pages 5 and 6 Developing Bike Life: What's	Developing Bike Life	Various data, depending on each individual city report	Additional data provided by partner authority.

happening in the city			
Page 7 The impact: The health, economic and environmental benefits to the city	Many people are cycling in the city	Trips made by bike in the past year	The total number of trips for each city is calculated by summing the number of trips for each journey purpose, as set out in the section “Where are people cycling?” on page 4 (detailed above).
		Miles cycled	Estimated by combining the number of trips for each purpose as described above, with an average (median) trip length for each purpose. Average trip distance was obtained from questions in the ICM survey covering each trip purpose separately.
		Equivalent number of times around the world	This is the total trip length each day divided by the distance round the world and rounded to an appropriate level.
		Equivalent number of times cycled the length of Great Britain	This is the total trip length each day divided by the distance to cycle from Lands End to John O’Groats and rounded to an appropriate level. Source: https://www.sustrans.org.uk/ncn/map/walking-and-cycling-inspiration/challenge-yourself/lands-end-john-ogroats-lejog
	Benefiting individuals and the local economy	Net benefit for each mile cycled instead of driven	This is the difference between the total cost per mile of driving a car and the total cost per mile of riding a bike. The costs of both include costs and benefits to the individual and to society as a whole. The calculation includes figures for the operating costs of bike and car, travel time of both, traffic congestion and health benefits (the main factors), and also infrastructure, local air quality, noise, greenhouse gases, and indirect taxation The figure for each factor is based on best available evidence from the UK and Europe, including data taken from the Government’s standard Transport Analysis Guidance (WebTAG). This methodology is influenced by that used for the Copenhagen Bicycle Account, which has been established for 20 years and was one of the main inspirations for Bike Life.
		Annual benefit to city from people with a car choosing to cycle for transport	What this amounts to in each city is calculated by multiplying the per mile figure, as calculated above, by the estimated total pedalled distance that could have been driven across the year. Note that where this figure amounts to less than the figure for the value of early deaths prevented, this is because the figure for early deaths prevented covers all cycling, including leisure cycling journeys that would never have been driven.
		Benefit to city from all trips made by bicycle	This is comprised of three parts: <ul style="list-style-type: none"> • the annual benefit to the city from people with a car choosing to cycle for transport, plus • the value of similarly purposeful trips but cycled by people without access to a car, plus • the value of leisure cycle trips made by everyone

Page 8	Unlocking significant health benefits in the city	Number of early deaths prevented annually	Calculated using the widely recognised World Health Organisation (WHO) /Europe Health Economic Assessment Tool (HEAT). This estimates the number of premature deaths prevented by specified amounts of cycling.
		Value of early deaths prevented annually	Also calculated using the WHO HEAT tool, which subsequently estimates the value of the reduced mortality. This is based on contingent valuation studies that test the amounts people would be prepared to pay to increase their chances of survival.
		Number of serious long term health conditions averted annually	This is calculated using the Sport England MOVES tool which shows the return on investment for health of sport and physical activity. Physical activity protects against many illnesses. MOVES uses the latest research to estimate the number of eight specific conditions that are likely to be prevented: <ul style="list-style-type: none"> • Type 2 Diabetes • Coronary Heart Disease • Cerebrovascular disease (Stroke) • Breast Cancer • Colorectal Cancer • Dementia • Depression • Hip Fracture Note this is the reduction in incidence of these conditions i.e. the reduction in the number of new cases likely to arise in a year.
		Saving to the NHS	This is also calculated using the MOVES tool and is the annual saving in health care costs arising from the number of conditions averted.
		Equivalent number of average nurse's salary	This is the estimated saving to the NHS divided by the average salary of a nurse (£23,319) http://www.payscale.com/research/UK/Job=Registered_Nurse_(RN)/Salary
		Keeping your city moving	Transport capacity of a 4m wide lane per hour
	Number of return cycle trips are made daily in city by people that could have used a car.		This is calculated from the relevant responses to the ICM survey. It includes purposeful cycle trips for transport made by people living in households with a car. It excludes trips made by people without a car, and excludes all leisure trips.
	Number of cars taken off the road		The number of return cycle trips made by people that could have used a car is considered to be same as the daily number of cars taken off the roads.

		Length of equivalent traffic jam/tailback	This is the space that would be taken by the cars taken off the road (as above), lined end-to-end. It assumes that in a stationary queue a car would take up the space of a standard car parking space.	
		Space occupied by displaced cars, expressed in relation to a well-known local open space	This is the space that would be taken to park the number of cars taken off the road. It assumes parking spaces of average size (2.4m width x 4.8m length = 11.52m ²) and is related to different well-known local open spaces in each report.	
	More people riding bikes has environmental benefits		Tonnes of greenhouse gas emissions saved annually	The total distance cycled was calculated as above (page 7), and the part of this distance that could have been driven was estimated on the basis of all purposeful cycle journeys done by respondents who said they had a car in their household. This gives a total annual distance that could have been driven instead. The greenhouse gas emissions saved are calculated as the CO ₂ that would have been emitted by an average car driven this distance.
			Equivalent carbon footprint	This is the CO ₂ emissions as calculated above, divided by the carbon footprint in CO ₂ equivalent of an average UK citizen (CO ₂ emissions per capita). Carbon footprint includes emissions from all activities and of all greenhouse gases. For Perth and Stirling the CO ₂ emissions per capita figures are for the whole of the Perth & Kinross and Stirling Council areas, not the cities as we have defined them for Bike Life.
			kg of NOx and kg of particulates saved annually	These are calculated from the distance and trips cycled that could have been driven annually. It is based on the emissions that an average car (diesel or petrol) would produce. The calculation takes into account the average per trip emissions from a cold-start, emissions per km at normal operating temperature, and emissions per km arising from brake wear, road abrasion and tire wear.
			Early adult deaths occurring each year where long-term exposure to air pollution (PM _{2.5}) is deemed to be a contributory factor.	This is based upon Public Health England, 2014: Estimating Local Mortality Burdens associated with Particulate Air Pollution, for Adults = 25 years+. For Perth and Stirling the number of air pollution related deaths figures are for the whole of the Perth & Kinross and Stirling Council areas, not the cities as we have defined them for Bike Life.
Pages 9 and 10 Stories from our city: What cycling means to people		“Stories from our city”	Local photographic events and interviews for Bike Life held in summer 2018. Where items of data are included, these are the opinion of interviewees.	

Page 11 Barriers and potential: What needs to change to make cycling commonplace	Safety and security continue to be a significant concern	Percentages of people that feel safe during the day, when using each mode of transport	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Frequency of injuries occurring in relation to the number of miles pedalled around city	The number of miles cycled in the city was estimated as above (page 7). This was then divided by the number of people on bikes reported as being injured in the city for the latest available year of data. This only includes injuries that were reported to the police.
		Percentage of people who think their city is a good place to ride a bike overall	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Percentage of people who think cycling safety in their city is good	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Percentage of people who think that the safety of children's cycling is good	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Reported bike thefts	Reported bike theft figures are provided by a response to a Freedom of Information request. The data in the reports show the data by financial year.
		Percentage chance of a bike rider having their bicycle stolen in the past year	The reported number of bike thefts as above is divided by the number of bike riders; the percentage of respondents to the ICM survey saying they had ridden a bike in the previous four weeks, scaled up for the whole adult population of the city.
		Percentage of people who think that the security of bicycle parking in their city is good	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
How do residents rate the city's cycle routes?	Percentage of people who think that the amount, directness, condition and signposting of cycle routes in their city is good	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.	
Page 12	How do people see themselves when it comes	How people see themselves when it comes to riding a bike	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.

	to riding a bike?		
	Perceptions of cycling are positive	Perceptions of cycling	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
Page 13 What the public want: Investment, safety and dedicated space	Prioritising investment in cycling and walking	Percentages of people who think that more space for: <ul style="list-style-type: none"> • cycling and walking • buses, or • cars are the best ways to keep the city moving • improve health and fitness • improve air pollution • make streets more attractive 	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Percentage of residents would like to see more investment in cycling in city	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Percentage of residents aged over 65 who would like to see more investment in cycling in city (Glasgow)	The percentage of respondents aged over 65 giving these answers to the relevant question in the survey conducted by ICM.
		Percentage of residents who do not ride a bike and do not want to, who would like to see more investment in cycling in city (Stirling)	The percentage of respondents who do not ride a bike and do not want to, giving these answers to the relevant question in the survey conducted by ICM.
	Improved safety and space for cycling	Percentage of people that think safety needs to be improved, for each mode of transport	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.

		What people would find very useful to start cycling/cycle more	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
		Percentage of residents that support building more protected cycle lanes, even when this can mean less room for other road traffic	The percentage of respondents giving these answers to the relevant question in the survey conducted by ICM.
Page 14 Bike to the future: Our ambition and plans to make it happen	Bike to the future	Various data, depending on each individual city report	All information supplied by the relevant authority, as shown on the front cover.

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Sustrans is the charity making it easier for people to walk and cycle. We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute. **Join us on our journey. www.sustrans.org.uk**

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