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Report for the Bicycle Association:

The UK cycle industry: current economic and employment benefits and its decarbonisation-driven growth potential

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Summary

This report estimates the current value to the economy of cycling and the cycle industry in the UK and associated cycling jobs. The economic benefits include the Gross Value Added (GVA) from retail sales of bicycles and parts, accessories and clothing (PAC); manufacturing and distribution; cycling tourism; and the design and construction of cycle infrastructure. They also include the tax revenue to government associated with cycle retail and the wider benefits associated with improved health, reduced congestion, reduced absenteeism and reductions in greenhouse gas and pollutant emissions.

The summary table below and infographic overleaf show that cycling and the cycle industry currently provide an estimated **£7.5 billion in economic value per year, equivalent to around £1,800 per year for each adult cyclist. The cycle industry alone provides around £1.2 billion in direct economic benefits and tax, with a further £0.6 billion in benefits from cycle tourism, events and infrastructure.**

Summary table of estimated economic benefits in the UK associated with cycling levels in 2019 and 2030 (rounded to nearest £10 million)

	Estimated current benefit (£ million) (a)	Estimated benefit 2030 (lower bound) (£ million)	Estimated benefit 2030 (upper bound) (£ million)
Cycle industry (retail, wholesale and manufacture) (GVA)	840	1,450	2,020
VAT revenue to government	390	680	930
Tourism, events and infrastructure GVA	560	Not estimated	Not estimated
Wider benefits (b)	5,730	73,160	146,070
TOTAL BENEFIT (£ million)	**7,520**	**74,610**	**148,090**

(a) Current value based on 2019 (pre-Covid) cycling levels and 2020/21 industry data

(b) The wider benefits estimated for 2019 are not directly comparable with those in 2030 due to differences in methodology.

Many benefits are not included as they are difficult to monetise at a national scale. But there is significant evidence that cycling is good for business through the following:

- Improvements to the public realm resulting in improved high street performance.
- Increase in retail spend and employment.
- Increase in local property values.
- Agglomeration benefits (gains in productivity from increased density of workers in cities).

The cycle industry and use of its products and services also currently supports **around 64,000 – 69,000 green jobs, a third of which (23,000) are with the cycle industry**. These jobs are varied and range from the highly skilled and technical through to sales, training, administration, construction and delivery.

While there are large economic and employment benefits from the UK cycle industry today, there is even greater growth potential in the coming years, driven by our carbon reduction 'net zero' targets and other government policy objectives.

We are in a climate emergency. A shift to higher levels of cycling (still modest by international standards) can help achieve our legally binding national carbon targets in a cost-effective way. This

will reduce the need for more onerous restraints on car travel and will have significant public health benefits.

This report estimates the minimum levels of cycling needed in the UK to meet net zero targets by 2030, based on an assumed shift in car mileage for trips of 2-10 miles that are of cyclable length. We have estimated that a nearly five-fold increase in cycling trips across the UK could make a significant contribution towards reducing car mileage and achieving the UK's carbon targets. If achieved, this increase in cycling will bring a green economic dividend **of the order of £75-149 billion per year and between 81,000 and 130,000 additional jobs by 2030.** Note that this is likely to underestimate the future economic value and jobs due to the potential for reshoring of bike manufacturing and increases in cycle tourism and cycle logistics.

The cycle industry is an important green growth sector. To achieve the economic benefits and green jobs identified in this report, UK Government and the cycling industry will need to work together: Government actions can increase demand, while the cycle industry, with appropriate strategic industrial support, can ensure supply.

Priority actions for Government are listed below. Actions 1, 5 and 6 will increase demand, while actions 2, 3 and 4 will assist the cycle industry to increase supply.

1. Funding for grants to drive demand for e-bikes and e-cargo bikes to replace car and van trips.
2. Funding for innovation in the UK's bike, e-bike and Light Electric Vehicle industry in order to grow the UK's capacity and market share.
3. Targeted funding and courses/apprenticeships for the cycle industry to support current and future skills requirements, career progression and a 'just transition' for workers in high carbon sectors.
4. Action to reduce inequalities in access to education, training and jobs, to increase representation of women and other under-represented groups.
5. Increased and sustained funding for high quality walking and cycling infrastructure, with support for reallocation of road space to cycling and a reduction of the default speed limit to 20mph in built-up areas, to make streets safer for cycling.
6. Targets for traffic reduction to drive policies to reduce road traffic and carbon, for example through measures such as road pricing which would disincentivise driving and generate revenue for sustainable alternatives.

A forthcoming report from the Bicycle Association will set out the role of UK industrial policy in building the bicycle economy in order to reap a green economic dividend and around 100,000 green jobs.

The initial investment in measures to encourage more cycling and support to grow the sector will be far outweighed by the economic benefits generated by more cycling and the cycle industry. This is an investment that is good for business, good for the UK economy and which can support the future resilience, competitiveness and sustainability of the sector.

BICYCLE ASSOCIATION

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CYCLE TOURISM BENEFITS

- GVA = **£390m/y**
- Around **7,100 jobs**

BIKE & ACCESSORY MANUFACTURE BENEFITS

- GVA= **£110m/y**
- Around **2,000 jobs**

BIKE & ACCESSORY WHOLESALE BENEFITS

- GVA= **£244m/y**
- Around **2,000 jobs**

CURRENT CYCLING BENEFITS TO BUSINESS

- Increased productivity **£930m/y**
- Reduced congestion **£180m/y**
- Around **1.5 billion** car km not driven per year
- Increased retail spend
- Improved business performance
- Agglomeration benefits

CYCLE INFRASTRUCTURE CONSTRUCTION BENEFITS

- GVA = **£170m/y**
- Around **1,900-6,500 jobs**

BIKE AND ACCESSORY RETAIL BENEFITS

- GVA = **£490m/y**
- VAT revenue = **£390m/y**
- Around **19,000 green jobs**

TOTAL **CURRENT** CYCLING BENEFITS UK

- Benefits worth **£7.5 billion/year**
  of which cycle industry benefits (GVA/tax) worth **£1.2 billion** a year
- Benefits per adult cyclist = **£1,800/year**
- Total green jobs = **64,000-69,000***

FUTURE (2030) CYCLING BENEFITS UK**

- Benefits worth **£75-149 billion/year**
- Additional green jobs = **81,000-130,000**

HEALTH BENEFITS OF CYCLING

- Health benefits worth **£4.5 billion/y**
- Around **1,300** premature deaths a year avoided
- Around **22,000** serious illness prevented

ENVIRONMENT BENEFITS OF CYCLING

- Reduced greenhouse gas emissions = **£93m/y**
- Nearly **259,000 tonnes** of GHG emissions avoided per year
- Reduced air pollution = **£11m/y**

Source: The UK cycle industry: current economic and employment benefits and its decarbonisation-driven growth potential. Report by Transport for Quality of Life for the Bicycle Association.

*other jobs include bike delivery, bike training, bike hire

**Driven by decarbonisation targets

1. Introduction

This paper examines the economic benefits of cycling investment and how many jobs are created by the bicycle economy. It updates an earlier (2018) study for the Bicycle Association[1]. Since that last paper was published, there has been an upsurge in cycling due to behaviour change during the Covid pandemic, which has shown the potential for cycling; and the government has announced new national carbon targets for 2030, which require rapid decarbonisation of the transport sector. At the same time the UK is experiencing a recession, inflation and a cost-of-living crisis. This threatens to reduce consumer discretionary expenditure on bikes and parts, even though cycling offers a more affordable means for people to access jobs and services. The cycle industry needs the right support in place if it is to realise its potential and help deliver the government's carbon and other policy goals.

This study draws on the Market Data Service (MDS), large-scale retail sales data collected by the Bicycle Association from more than 2,000 cycling retail outlets across the country. The MDS provides data on the 'bicycle economy' – that is, sales of bicycles and cycling equipment, cycle maintenance and other cycle services.

This study also estimates the contribution to the economy made by cycle manufacturing and wholesale; cycle tourism; and construction of cycle infrastructure. It quantifies the wider economic benefits of improved health; reduced pollutant emissions; congestion relief and gains in productivity. It also reviews qualitative evidence of the impacts of cycling and cycle infrastructure on business performance and retail vitality.

Using these economic figures and other data, this study updates the estimate for number of jobs generated by cycling in the UK.

Finally, it considers what level of cycling is necessary in future if we are to achieve the UK's new carbon targets by 2030, quantifies what economic benefits, and how many jobs, this would deliver, and makes recommendations for the Government on steps needed to achieve this.

2. The current bicycle economy in the UK

2.1 Retail, wholesale and manufacture

Sales of bikes and cycle products reached record levels in 2020, fuelled by Covid lockdowns. Bike shops in the UK were estimated to sell over 3.2 million new bikes (of which over 160,000, or 5%, were e-bikes). This is equivalent to 1 in 20 of the UK's population buying a new bike in 2020. While the sales value of bikes and cycling products fell by 8% in 2021, and is expected to fall further in 2022, partly as a result of the cost-of-living crisis, the overall market value in 2022 is still likely to be higher than 2019[2].

We have taken the average of retail sales figures from 2020 and 2021 to give a representative estimate of the current bicycle economy in the UK. With forecasts for the overall market value to grow over the next two years[3], this provides an indication of the near-term potential.

Table 1 shows retail turnover (sales value excluding VAT) of cycling products and services in stores in the UK in 2020/21 was over **£1.9 billion.** The total turnover of bicycles (including e-bikes) was over

[1] Newson C and Sloman L (2018) The Value of the Cycling Sector to the British Economy: A Scoping Study. Report for the Bicycle Association, June 2018 and Cycling UK (2020) Economic Benefits of Cycle Tourism.

[2] Worthington J (2022) A Bumpier Ride. Challenges and prospects in the UK Cycling Market. Report for the Bicycle Association. January-June 2022, (available to members only).

[3] Ibid. Overall market value by 2024 is expected to be very similar to 2021.

£1.1 billion. In addition, turnover of parts, accessories and clothing (PAC) was worth nearly £700 million. Cycle services (e.g. bike maintenance) were worth over £30 million. Turnover of other 'micro-mobility' products (such as e-scooters) was worth over £70 million.

Table 1: Estimates of cycling products and services retail, wholesale/distribution and manufacture turnover (excluding VAT), by value in the UK by nation and total VAT revenue (£m/year). Retail turnover and VAT average of 2020 and 2021; manufacture and wholesale estimates for 2021.

Category	Turnover value (£m)				
	England	**Wales**	**Scotland**	**N. Ireland**	**UK**
Retail[4]	1,687	109	98	34	1,928
All bikes except e-bikes	730	49	44	16	838
E-bikes (including E-Cargo bikes)	263	20	14	3	299
Parts, accessories and clothing	601	35	35	12	684
Services	28	2	2	<1	31
Other micro-mobility (including e-scooters)	66	3	3	2	74
Wholesale and manufacture[5]	1,567	97	169	9	1,842
Distribution of bikes and PACs	1,299	81	140	8	1,528
Manufacture of bikes and PACs	267	17	29	2	314
Total retail, wholesale and manufacture	3,254	206	267	43	3,770
Total VAT revenue from retail sales	337	22	20	7	386

There is also an important bike and cycle product wholesale/distribution sector which includes companies such as Trek, Madison, Specialised, Raleigh, Zyro Fisher and Giant and scores of smaller companies. We estimate the total turnover from bike and cycling product distribution in the UK was over **£1.5 billion in 2021**.

The UK also has growing bike and PAC manufacturing capacity. The BA has identified over 120 bike and cycling product manufacturers in the UK[6], including Brompton in London, with a turnover of over

[4] Source: Bicycle Association Market Data Service (MDS). Turnover value (i.e. excluding VAT) rounded to nearest £1m. The MDS collects online, 'click and collect' and in-store sales and is estimated to capture 70% of total UK cycling market turnover. Figures are scaled up to 100%. Sales from UK-based online-only stores are allocated to the four nations in the same ratio as regional sales.

[5] Source: Bicycle Association's estimates of jobs in bike and PAC production in each of the four nations used to estimate manufacturing turnover, using a factor for jobs/£m turnover derived from the average of seven large UK bike & PAC manufacturers. Distribution turnover was estimated using a single figure for jobs in the UK, and assuming the same breakdown by nation as for manufacturing, and a factor for jobs/£m turnover estimated from the average of nine large UK bike and PAC distribution companies.

[6] Bicycle Association (2022). Personal Communication with David Middlemiss, 19/10/22.

£76 million in the 12 months to March 2021[7]; Hope Technology in Lancashire, one of the world leaders in engineering bicycle components, with a turnover of £21 million in 2020/21[8]; Hunt Bike Wheels in Sussex, leading wheel designers with a turnover of £17 million in 2020/21[9]; Frog Bikes in Wales, award-winning bike manufacturer[10] with a turnover of £13 million in 2020/21[11] and scores of smaller manufacturers, designers and assemblers. We estimate the total turnover from bike and cycling product manufacture in the UK was over **£314 million in 2021**.

Combined **the total turnover from bike and cycle product retail, wholesale and manufacture in the UK is estimated at nearly £4 billion** (average of 2020 and 2021 for retail, 2021 figures for manufacture and distribution).

Not included in this figure is the value of the second-hand bike market, estimated by the Bicycle Association as roughly between £215-360 million per year[12]. Although some of this value will accrue in fees to on-line sites such as e-Bay, Gumtree, Craigslist etc, the majority will go directly to private sellers.

In addition, the bike industry generated an estimated **£386 million of VAT revenue** for the government from retail sales (average of 2020 and 2021). This is a significant amount compared to, say, the VAT on energy saving products and materials (such as heat pumps) which have been zero rated since April 2022, at an estimated cost to the government of £45-65 million a year over the next 5 years[13].

We have applied a standard 'turnover to GVA ratio', based on data from the Annual Business Survey for businesses in the relevant Standard Industrial Classification (SIC)[14] and Scottish Business Statistics[15] to estimate the gross value added (GVA, the value of goods minus their cost of production). The total GVA from bike sales, services distribution and manufacturing in the UK, summarised in Table 2, **is estimated at nearly £844 million**.

Table 2: Current annual value of bike manufacture, and sales of cycling products and services to the UK economy by nation (£m) Retail turnover and VAT average of 2020 and 2021; manufacture and wholesale estimates for 2021.

	Gross Value Added (£m) (a)				
	England	**Wales**	**Scotland**	**N. Ireland**	**UK**
Sales of bicycles incl. e-bikes, PACs and other micromobility (b)	415	26	24	8	473
Repair/services (c)	13	2	2	1	17

[7] Hurley J (2021) Brompton bicycle steers past 'scary' bumps to lift sales and profits. Article in The Times, 27/12/21.

[8] Endole (2022) Hope Technology (Ipco) Ltd. Financials for year ended April 2022, Endole website.

[9] Endole (2022) ITS Cycling Ltd. Financials for year ended Dec 2021. Endole website.

[10] Beech A (2022) Welsh Manufacturing Sector Recognised at Awards. Frog Bikes news article, 07/10/22

[11] Endole (2022) Frog Bikes Ltd. Financials for year ended Feb 2021, Endole website.

[12] Based on an estimate of the number of bikes and e-bikes sold on e-Bay per year and an average price of around £335 per bike and £800 per e-bike, and assuming a market share for e-Bay of between 20%-33%. Bicycle Association (2023) Personal Communication with John Worthington, 23/01/23.

[13] HM Revenue & Customs (2022) The Value Added Tax (Installation of Energy-Saving Materials) Order 2022. Policy Paper, 23/03/22.

[14] Office for National Statistics. UK Standard Industrial Classification (SIC) Hierarchy.

[15] Scottish Government (2020) Scottish Annual Business Statistics We have assumed that the GVA/turnover ratio will be similar for England, Wales and Northern Ireland.

Bicycle & PAC distribution (d)	208	13	22	1	244
Bicycle & PAC manufacture (e)	94	6	10	1	110
TOTAL	**729**	**47**	**58**	**11**	**844**

(a) Turnover value from Table 1 multiplied by ratio of GVA to turnover
(b) SIC Class 47.78, used GVA ratio for 'retail trade' of 25%
(c) SIC Class 95.29, used GVA ratio for 'other service activities' of 46%
(d) SIC Class 46.90, used GVA ratio for 'Wholesale trade, except of motor vehicles and motorcycles' of 16%.
(e) SIC Class 30.92, used GVA ratio for 'manufacture of basic and fabricated metals, machinery, motor vehicles and other transport equipment' of 35%. This may underestimate the GVA from PAC manufacture alone.

2.2. Cycle tourism and events

Cycle tourism also generates significant economic benefits for the UK. This comprises the tourism spend attributable to cycling holidays and day trips by UK residents and overseas visitors, and the spend attributable to large-scale cycling participation or spectator events. Studies estimating the economic benefits of cycle tourism were summarised in our previous report for the Bicycle Association[16] as well as more recently by Cycling UK[17]. For example:

- **Great Britain:** A 2015 study for Visit Britain estimated the attributable tourism expenditure on cycling (i.e. whether cycling was a very or fairly important reason for taking a domestic holiday, day trip or overseas visit to Britain) was £520 million[18]. There are no updated studies or figures on cycle tourism expenditure. Note that this figure includes associated expenditure (e.g. accommodation and food and beverages) and captures some event-related expenditure.
- **England:** An evaluation of the economic impact of the UK stages of Le Tour (the Tour de France) in 2014 showed that it produced a direct economic benefit of £128 million for the host regions (Yorkshire, Cambridgeshire, Essex and London) plus an additional £33 million from overseas visitors[19].
- **Wales**: A Cycle Wales toolkit suggested cycling was worth £90 million to the Welsh economy through day visits and overnight stays[20].
- **Scotland**: a 2013 study for Transform Scotland on the value of cycle tourism estimated that direct expenditure by leisure cyclists was between £106-228 million a year, depending on methodology used, and contributed £58.5 million in GVA. The same study showed that cycling events alone contributed £5.6 million to the economy based on estimated participants and visitors at 17 events in 2012[21]. A separate study estimated one large event, the Mountain Bike World Cup held in Scotland over three days in 2017, generated £37 million for the local Highlands economy[22].

[16] See Newson C and Sloman L (2018) The Value of the Cycling Sector to the British Economy: A Scoping Study. Report for the Bicycle Association, June 2018 and Cycling UK (2020) Economic benefits of cycle tourism. June 2020.
[17] Cycling UK (2020) Economic benefits of cycle tourism. June 2020.
[18] TNS (2015) Valuing activities. Report for Visit Britain. 07/10/15.
[19] Leeds City Council (2014) Three Inspirational Days. Background paper. Report commissioned by Leeds City Council, Transport for London, UK Sport and TdFHUB2014.Ltd
[20] Beici Cymru/Cycle Wales (2016) Toolkit.
[21] Zofka I (2013) The Value of Cycle Tourism. Opportunities for the Scottish economy. Report for Transform Scotland. June 2013.
[22] The event attracted 336 participants and 10,040 unique spectators. BVEP (2020) The UK events report. How events deliver the UK industrial strategy.

- **Northern Ireland**: One large cycling event in 2014 attracted over 140,000 spectators and was estimated to have generated £2.5 million for the economy[23].

Although there is a wide variation in estimates of the overall economic benefit from cycle tourism[24], scheme-level evidence suggests investment in cycle trails can generate large and ongoing economic benefit, outweighing the one-off investment costs of the infrastructure. This may represent a particular benefit for rural economies. For example:

- One US study estimated that the annual economic impact of cyclists in one coastal region was almost nine times greater than the capital investment in off-road cycle infrastructure that facilitated the cycle tourism[25].
- An economic impact study of an £8.3 million network of new cycle trails in Cornwall estimated that the scheme would create a growth of 4% in the annual market for tourism, generating £2-3 million of income per year that would otherwise not have been spent in the area[26].
- The attributable tourism value of three walking/cycling trails in Devon was estimated at £2.9 million a year[27].
- An evidence review by Sustrans suggested that long distance cycle routes can generate as much as £30 million/year to the local economy and sustain over 600 FTE jobs[28]. The review estimated that seven long distance cycle routes support nearly 1,300 jobs and create nearly £72 million in direct expenditure.
- Sustrans estimated that cycle tourism on the National Cycle Network in Scotland contributed £345 million to the economy[29].

In the absence of more recent figures, we have used the 2015 Visit Britain study to estimate tourism expenditure on cycling in England, Wales and Scotland in a non-pandemic year, with an assumed uplift of 15% based on the increase in total tourism revenue over the period 2015-2019. We have additionally estimated the Northern Ireland tourism cycling expenditure assuming the same proportion of cycling to total tourism expenditure as the rest of the UK[30].

For cycling events, we have used figures from Transform Scotland's 2013 report to estimate the average direct and indirect spend in the local economy for a typical large and small event (where we define a small event as <1,000 participants and spectators), applied to an estimated number of

[23] McKibben D (2014) Cycling for leisure, recreation and tourism. Report for the Northern Ireland Assembly. May 2014.

[24] This is partly due to whether the estimates are for direct or indirect expenditure or GVA and whether they include multiplier effects for suppliers and income. Even the official estimates of the contribution of total tourism to GVA are inconsistent between the four UK nations.

[25] North Carolina Department of Transportation Division of Bicycle Transportation (2004) Pathways to Prosperity: Economic Impact of Investing in Bicycle Facilities.

[26] CTC Cornwall (2018) Update on Possible Looe Valley Cycle Trail. Web article, 19/03/18.

[27] SQW Ltd. (2015). Devon cycling and walking trails Economic impact analysis for Devon County Council. November 2015.

[28] Sustrans (2017) Active Travel and Economic Performance: A 'What Works' review of evidence from cycling and walking schemes - Making the Economic Case for Active Travel Toolkit. Report by Sustrans with support from Dr Adrian Davis, Living Streets and The TAS Partnership Limited.

[29] Sustrans (2020) Sustrans and VisitScotland launch push to improve Scotland's cycle touring offer. News article, 20/07/20.

[30] Total tourism expenditure by nation from Deloitte and Oxford Economics (2013) Tourism: Jobs and growth. The economic contribution of the tourism economy in the UK. November 2013.

small/large events in each nation in a typical non-pandemic year. The methodology is set out in Appendix A.

Table 3 shows the estimates of cycle tourism and cycling event expenditure for a typical (non-pandemic) year and associated GVA. These figures suggest that cycle tourism contributes around £389 million in GVA to the UK economy, which is around 0.6% of total UK tourism GVA[31].

Table 3: Estimated expenditure on cycling tourism and cycling events in the four nations, and associated GVA (£ million) in a typical non-pandemic year

	England	Wales	Scotland	N. Ireland	UK
Estimated cycle tourism expenditure 2015 (£m) (a)	410	69	41	10	530
Estimated cycle tourism expenditure 2019 (£m) (b)	471	80	47	11	609
Estimated cycle event expenditure (£m) (c)	75	5	5	1	85
Total tourism and event expenditure	546	85	52	12	695
Estimated GVA (£m) (d)	306	47	29	7	389

(a) The GB total was allocated to England, Wales and Scotland assuming that the regional allocation for total including overseas holidays spend is the same as for domestic holidays and day trips. It was assumed that the cycling tourism spend as a percentage of total tourism spend in Northern Ireland was similar to that of Great Britain[32].

(b) We have increased the 2015 figures by 15% on the basis that the value of tourism to the British economy has increased by roughly 15% between 2013 and 2018[33].

(c) Based on an estimate of 36 large events and 322 small events (as defined above) in the UK in a non-pandemic year[34].

(d) Converted using an average of the 2019 GVA/turnover figures for accommodation and food service activities of 56%[35].

2.3. GVA from improved cycling and walking infrastructure

As well as facilitating cycle tourism, the design, construction and maintenance of cycling and walking infrastructure creates economic benefits and jobs directly. In 2020 the UK had over 12,000 miles of signed national routes (National Cycle Network) managed by Sustrans[36] as well as an unquantified but significant quantity of local cycle routes managed by Local Authorities or National Highways.

There are no comprehensive statistics for total spend on cycle infrastructure. We have estimated the GVA from cycle infrastructure based on the spend in 2020 from emergency Active Travel Funds set up in response to the Covid pandemic. This figure (£454 million for the UK) is probably a conservative estimate for spend in a non-pandemic year, as it does not include developer contributions or local

[31] This is a similar proportion to the attributable expenditure on cycling (£520 million) to the total tourism expenditure (£121 billion) in 2015 from the TNS study.

[32] Deloitte and Oxford Economics (2013) Tourism: jobs and growth. The economic contribution of the tourism economy in the UK. November 2013.

[33] The value of tourism to the UK economy in 2013 was £126.9 billion and in 2018 was £145.9 billion. UK Tourism Statistics 2015 and UK Tourism Statistics 2019.

[34] The website sportive.com lists around 315 events in England, 20 in Wales, 20 in Scotland and three in Northern Ireland in 2019. We have assumed that the majority of these (90%) will be small events (< 1,000 participants and spectators).

[35] Standard Industrial Classification (55-56). Scottish Government (2020) Scottish Annual Business Statistics We have assumed that the GVA/turnover ratio will be similar for England, Wales and Northern Ireland.

[36] Sustrans (2022) Paths for Everyone. 3 years on. 2018-2021 Progress Report. January 2022.

authority spend. Table 4 below shows that the development and construction of cycle infrastructure in 2020 is estimated to have generated £173 million in GVA for the UK economy.

Table 4: GVA associated with cycle infrastructure spend in the 4 nations in 2020 (£m/y)

	England[37]	Wales[38]	Scotland[39]	N. Ireland[40]	UK
Cycle infrastructure spend	319	30	100	5	454
GVA (a)	121	11	38	2	173

(a) Converted using the GVA/turnover figures for construction (SIC Class 42: Civil Engineering) in 2020: GVA to turnover ratio of 38%[41].

In March 2023, the UK Government announced a reduction in active travel funding for England[42]. This includes a cut of capital funding by two-thirds to only £100 million for the next two years (i.e. £50 million per year)[43]. This leaves England outside London lagging behind other nations, with capital spending on active travel over the next 2 years of just £1 per head per year, compared to £19 in Wales and £50 in Scotland[44]. By contrast, the latest Scottish Government commitment is to treble the active travel budget to at least £320 million by 2024–2025, a figure which will represent 10% of the total transport budget[45] and will effectively treble the GVA associated with this spend. The Welsh Government is spending £60 million in 2022/23 through its Active Travel Grants Programme[46].

Given that active travel infrastructure commonly provides very high value for money with Benefit Cost Ratios of 4 or more[47] the recent funding cuts for England appear to be a false economy. The drive for net zero, cleaner air and improved health and wellbeing, together with the proven economic benefits of cycling, all warrant sustained levels of higher investment in cycle infrastructure throughout the UK in future years.

2.4. Other economic benefits of cycling

Cycling yields many benefits, only some of which are captured in conventional economic appraisal. Table 5 summarises benefits stemming from improved cycling conditions, more cycling and reduced car travel (though there is overlap between these categories). Benefits that can be quantified in economic appraisal are shown in bold; those that are not normally quantified in economic appraisal are shown in italics.

[37] £97.6m from London, and £221.9 million for tranche 1&2 of the Active Travel Fund in England.
[38] Welsh Government (2020) Active Travel Fund Grant. Guidance to Applicants 2020 to 2021.
[39] Scottish Government (2020). Budget agreement reached. 26/02/20.
[40] Murray J (2020) Cycling UK CAN help achieve an NI Active Travel Act. Cycling UK blog, 20/22/20.
[41] Scottish Government (2020) Scottish Annual Business Statistics We have assumed that the GVA/turnover ratio will be similar for England, Wales and Northern Ireland.
[42] Secretary of State for Transport (2023) Transport Update (UIN HCWS625). Statement made to Parliament on 9 March 2023.
[43] Ibid.
[44] Sustrans (2023) Protecting the walking and cycling budget. Briefing, March 2023.
[45] Scottish Government (2021). A fairer, greener Scotland: programme for government 2021–22. 07/09/21.
[46] Welsh Government (2021) Welsh Government Active Travel Fund Grant Guidance to Applicants 2022-23.
[47] Sustrans (2019) Common Misconceptions of Active Travel Investment. A review of the evidence. LCWIP Strategic Support. July 2019.

Table 5: Benefits of increased cycling and reduced car travel[48]

Improved cycling conditions	More cycling	Reduced car travel
• **Improved user convenience, comfort, enjoyment and safety**	• **Improved fitness and health** • **Lower levels of absenteeism**	• **Reduced traffic congestion** • **Reduced greenhouse gas emissions** • **Reduced pollution** • **Reduced noise** • **Reduced collisions**
• *Improved accessibility for non-drivers, which supports equity objectives* • *Higher property values* • *Improved public realm (more attractive streets)* • *Improved business performance* • *Agglomeration benefits* • *More inward investment* • *Option value[49]*	• *More local economic activity (retail spend and employment)* • *Increased community cohesion (positive interactions among neighbours)* • *More neighbourhood security*	• *Road and parking facility cost savings* • *User cost savings* • *Reduced escort trips* • *Energy conservation*

From Table 5 it is apparent that a number of the benefits of cycling investment that are overlooked in conventional economic appraisal are benefits to businesses and local economies. These 'hidden business benefits' include:

- **Increased retail spend and employment**: Improving cycling and walking infrastructure in retail areas increases spending in (existing) shops by up to 30%[50]. A study of the impacts of cycle infrastructure in six US cities found increased sales, employment and wages in nearly all of the 14 city corridors studied, even in cases in which roadspace was reallocated to a bike lane[51]. For example, when roadspace was reallocated to a bike lane on a main business corridor in Minneapolis in 2012, retail employment increased by 13%, compared to 9% in a control area, while food sales increased by 52%, more than double the increase in the control area[52].
- **Improved business performance:** A 2018 study found that an increase in cycling trips in Greater London significantly contributes to the emergence of new local shops and businesses[53]. The study provided strong evidence of causality (i.e. the increase in cycling was not just associated with more businesses, but actually caused it) and ruled out the reverse effect that more shops attract more cycling trips. A TfL survey found that 85% of Business

[48] Adapted from Litman T (2022) Evaluating Active Transport Benefits and Costs. Guide to Valuing Walking and Cycling Improvements and Encouragement Programs. Report by Victoria Transport Policy Institute, October 2022. We have added several new categories.

[49] The value people may place on having an option available that they do not currently use.

[50] Lawlor E (2013) The pedestrian pound. Just Economics for Living Streets

[51] Liu and Shi (2020) Understanding Economic and Business Impacts of Street Improvements for Bicycle and Pedestrian Mobility: A Multi-City, Multi-Approach Exploration. Report by Transportation Research and Education Center (TREC).

[52] Ibid.

[53] Klemmer K, Brandt T, Jarvis S (2018) Isolating the effect of cycling on local business environments in London. PLoS ONE 13(12): e0209090. https://doi.org/10.1371/journal.pone.0209090

Improvement Districts in London agreed that a good cycling environment was important for their business performance[54].

- **Positive impact on the housing market:** Not only can good active travel infrastructure help to deliver more homes and create more attractive developments, but there is evidence of increasing demand for high quality cycle infrastructure and cycle parking from renters and home buyers[55].
- **Higher property values:** Improved conditions for active travel increase property values and support local development[56]. A study that calculated the extra financial value associated with good street design in ten London commercial districts found street design improvements can typically increase residential property values and shop rental values by about 5%[57].
- **Agglomeration benefits**: Time savings and agglomeration benefits (gains in productivity from increased density of workers and firms) can be significant for cycle commuters in large cities. For example, the Dublin bikeshare scheme was estimated to provide agglomeration benefits of up to 6.7 million Euros (£6.3 million in 2020 prices)[58]. Cycling (and walking) supports more compact development, enabling more workers, visitors and residents to get in and out of town and city centres without relying on private cars. For example, a report by LSE suggested Copenhagen's compact urban form, where more than 60% of residents commute by bike, is a key driver of the city's green economy, providing agglomeration benefits, more efficient energy use and lower carbon emissions[59]. Shorter travel to work times by bike (which are faster than by car) confer significant economic benefits, with the cost of commuting in Copenhagen a much smaller percentage of GVA than in Stockholm or London[60].
- **Inward investment**: Property experts Savills consider that the pandemic has led people to place greater emphasis on health and wellbeing, and good cycling networks are consequently of key importance for young high-tech workers[61]: "*the pandemic has led to a reassessment by some about what makes a good place to be. Wellness matters more than ever. A city's access to open space, cycle networks and clean air has risen in importance.*" In future, the places that are best positioned to attract people, talent and resources will be those with the ability to be a '15-minute city' (where essential needs are easily within reach in 15 minutes by bike or walking)[62].

Benefits that are captured in economic appraisal and are relevant to businesses and local economies include:

[54] Transport for London Walking and Cycling. The Economic benefits.

[55] Transport for London (2018) Cycling and the housing market. Summary report.

[56] Litman T (2022) Evaluating Active Transport Benefits and Costs. Guide to Valuing Walking and Cycling Improvements and Encouragement Programs. Report by Victoria Transport Policy Institute, October 2022.

[57] Buchanan C (2007) Paved with gold. The real value of good street design. Report for CABE.

[58] Bullock C et al (2017) The economic contribution of public bike-share to the sustainability and efficient functioning of cities. Sustainable Cities and Society 28 (2017) 76–87. https://doi.org/10.1016/j.scs.2016.08.024

[59] Ulturino L et al (2014) Copenhagen. Green Economy Leader Report. A report by the Economics of Green Cities Programme at the London School of Economics and Political Science.

[60] Ibid. The total value of annual time costs for commuting were 3.4% of GVA in Copenhagen compared to 8.4% in London.

[61] Savills research (2020) Tech Cities. Tech City Tiers. December 2020.

[62] Hackl C (2021) The City Of The Future: Walkable, Mid-Sized And Built For Flexible Work. Article for Forbes, 28/04/21.

- **Reduced absenteeism**: Regular physical activity such as cycling to work can reduce the number of sick days taken by employees by 27%, hence increasing productivity[63].
- **Reduced congestion**: in 2019, congestion cost the UK economy £6.9 billion[64]. By contrast in 2020 UK drivers spent 68% less time in congestion saving £3.4 billion across the UK[65]. Cycle lanes move more people in less space: for example, two weeks after opening, the cycle superhighway corridors in London were moving 5% more people per hour than they could without cycle lanes[66].

Finally, **cost savings to individuals** are not captured in conventional economic appraisal but are important in the context of the rising cost of living. Shifting travel from cars to cycling results in lower vehicle purchase costs and vehicle use costs (e.g. fuel, parking). Cycling UK estimate that replacing a second car with an e-bike would save £18,600 in the first year and £696/year for subsequent years[67].

Table 6 provides quantified benefits of cycling investment using conventional economic appraisal, in relation to health, lower absenteeism, cleaner air, lower carbon emissions and less congestion. This shows that cycling in the UK contributes around **£5.7 billion** per year in health, congestion and environmental benefits to the economy based on pre-Covid 2019 levels of cycling.

The benefits include:

- Around 1,300 premature deaths avoided per year.
- Nearly 22,000 serious illnesses avoided per year including nearly 7,000 hip fractures, over 6,000 cases of dementia, nearly 4,000 cases of depression, nearly 3,000 cases of coronary heart disease and over 1,000 cases of type 2 diabetes.
- Around 1.5 billion car km not driven per year.
- Nearly 259,000 tonnes of greenhouse gas emissions avoided per year.
- Over 532 tonnes nitrogen oxides (NOx) emissions and 76 tonnes of particulates (PM_{10} and $PM_{2.5}$) emissions avoided per year.

Table 6: Monetisable economic benefits of cycling to the economy in the UK (£ million). Wider benefits based on November 2018 – November 2019 levels of cycling. Methodology and assumptions can be found in Appendix A.

Benefits	Economic value (£million)				
	England	Wales	Scotland	N. Ireland	UK
Reduced premature death	3,802	140	321	118	4,381
More productive workforce (less absenteeism due to illness)	823	25	66	21	934
Reduced congestion	159	3	13	5	180
NHS savings through reduced serious illness	117	5	5	3	130

[63] Transport for London Walking and Cycling. The Economic benefits.

[64] Inrix (2020) INRIX Global Traffic Scorecard: Congestion cost UK economy £6.9 billion in 2019. Press release, 09/03/20.

[65] Ibid.

[66] Dollimore D (2021) Cycle lanes move more people in less space. Cycling UK blog, 18/03/21.

[67] Bengston C (2022) How much money can you save from cycling? Article for Cycling UK, 27/07/22.

Reduced greenhouse gas emissions	82	2	7	2	93
Reduced pollutant emissions	10	0.3	0.8	0.3	11
Health, congestion and environmental benefits	**4,993**	**175**	**412**	**150**	**5,730**

Other recent estimates by Sustrans of the wider economic contribution of cycling in the UK are of a similar order of magnitude, though based on a slightly different set of assumptions and individual benefits[68].

2.5 Total economic benefits

Table 7 below shows the total economic benefits from cycling in the UK are currently **around £7.5 billion a year**. This is equivalent to an economic benefit of **around £1,800 per adult cyclist**.

Table 7: Summary of the current economic benefits of cycling to the economy in the UK (£ million) (rounded to nearest £10m).

Benefits	**Economic value (£million)**				
	England	**Wales**	**Scotland**	**N. Ireland**	**UK**
Health benefits (reduced deaths and NHS savings)	3,920	150	330	120	4,510
Productivity gains	820	30	70	20	930
GVA from retail turnover and bike services	430	30	30	10	490
Government revenue from VAT	340	20	20	10	390
GVA from cycle tourism & events	310	50	30	10	390
GVA from wholesale & manufacture	300	20	30	<10	350
Congestion benefits	160	<10	10	<10	180
GVA from cycle infrastructure	120	10	40	<10	170
Greenhouse gas & pollutant reduction benefits	90	<10	10	<10	100
Total benefits	6,490	300	560	180	7,520

The estimated GVA for both 'retail, wholesale and manufacture' and for 'cycle tourism and events' captures only direct effects on GVA. Indirect effects (elsewhere in the UK supply chain) and induced

[68] Sustrans estimated that the economic contribution of walking, wheeling and cycling in the UK in 2021 was £36.5 billion. Sustrans (2022) Helping people through the cost of living crisis and growing our economy. October 2022. We have taken the Sustrans estimates, for cycling contribution only, from 17 of their Walking and Cycling Index 2021 reports and extrapolated to the UK to give a total economic benefit from cycling only of £5.5 billion. This includes medical costs, work absenteeism, congestion, infrastructure, local air quality, noise, greenhouse gases and taxation but not the health value associated with loss of life. However this is balanced by the much higher cycling figures from the Sustrans' bespoke surveys compared to the DfT cycling figures we have used, which will translate into higher benefits.

effects (from wages earned in the direct and indirect supply chain that are used to buy goods and services in the UK economy) are not captured.

3. Current jobs in the bicycle economy

Cycling jobs, and the skills needed to do them, are varied, ranging from the highly skilled and technical (e.g. design and manufacture) through to sales, training, administration, construction and delivery[69].

Our previous 2018 study for the Bicycle Association estimated that cycling generated around 64,000 full time equivalent (FTE) jobs in the UK including jobs in cycle tourism, bike sales and repair, cycle delivery, cycle product distribution and manufacturing, cycle infrastructure construction, and cycle hire schemes[70].

Most of these figures were derived from a study for the European Cyclists' Federation (ECF) which divided the cycling economy into five sectors: retail, production, infrastructure, tourism and services[71]. The study translated estimates of the economic value by turnover in each sector into FTE jobs based on FTE/turnover business statistics. We have used some of the UK factors from the ECF study (see Appendix B) combined with other data to update the estimate for number of jobs generated by cycling in the UK.

We have also included an alternative estimate for infrastructure jobs. This draws on a 2020 study that found that investment in cycle routes is one of the best ways of creating jobs through infrastructure spend, with more job creation potential than any other infrastructure project, aside from energy efficiency in buildings (with road building showing the lowest potential)[72]. It showed that around 33 jobs are created for every £1 million invested in walking/cycling infrastructure over a two-year period. We have used infrastructure spend in 2020, which provides a conservative estimate.

Although Covid meant that holidays and day trips were severely curtailed during lockdown and there were no large bike events in England, in a non-pandemic year the jobs associated with cycle tourism are likely to be significant. For example, we estimate that one large bike event (Le Tour in 2014) supported nearly 200 FTE jobs[73]. We have therefore used our estimated cycle tourism expenditure in 2019 (from Table 3).

Other jobs estimated include those associated with cycle delivery, bike hire and cycle (Bikeability) training which are based on 2021/2022 figures.

Table 8 shows the estimated **number of current jobs generated by cycling in the UK are around 64,000-69,000**.

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[69] UNECE, UNEP and WHO (2017) Riding towards the green economy: cycling and green jobs. A joint report by UN Environment-WHO-UNECE, 29/12/17.

[70] Newson C and Sloman L (2018) The value of the cycling sector to the British economy: A scoping study. June 2018. Report for the Bicycle Association.

[71] Blondiau T and van Zeebroeck B (2014) Cycling Works. Jobs and Job Creation in the Cycling Economy. Report for the European Cyclists' Federation.

[72] Minio-Paluello M and Markova A (2020) Can an infrastructure stimulus replace UK jobs wiped out by COVID19 crisis? Report by Transition Economics for the TUC. June 2020. Although not stated these jobs are likely to be mainly in construction plus design and public administration.

[73] The revenue from overnight and day visitors to London for Le Tour in 2014 combined with the ECF factors, converted to pound sterling and expressed in 2020 prices. Revenue estimates from Leeds City Council (2014) Three Inspirational Days. Background paper. Report commissioned by Leeds City Council, Transport for London, UK Sport and TdFHUB2014.Ltd

Table 8: Estimates of current cycling jobs in England (rounded to nearest 10)

Cycling sub-sector	Estimated no. FTE jobs				
	England	Wales	Scotland	N. Ireland	UK
Bike and bike accessory sales and bike repair (direct)	16,310	1,040	930	320	18,610
Bike manufacture and wholesale (direct)	3,450	210	370	20	4,060
Infrastructure lower estimate (direct)	1,510	140	180	20	1,850
Infrastructure upper estimate (direct)	5,270	500	640	80	6,490
Bike holidays and day trips[74] (direct/indirect)	5,520	930	550	130	7,140
Bike delivery (direct)	25,200	1,440	2,520	840	30,000
Bike events (direct/indirect)	890	60	60	10	1,010
Bike training (direct)	680	50	80	30	840
Bike hire (direct)	400	20	30	10	470
Total (lower estimate) (a)	53,960	3,900	4,720	1,390	63,970
Total (upper estimate) (a)	57,720	4,260	5,180	1,450	68,619

1. Lower estimate uses lower infrastructure estimate, higher estimate uses higher infrastructure estimate

The total is similar to our 2018 estimates of 64,000 cycling jobs in the UK, but the distribution is very different[75]. This total number of jobs is likely to be an underestimate as it does not include the jobs associated with sports coaching, freelance bike mechanics (e.g. Dr Bike), public policy and administration, advocacy, or communications (e.g. bike press).

Around one third of these are generated by the bike & PAC retail, wholesale and manufacturing industry combined, and over two-fifths are bike delivery jobs (see Figure 1 overleaf).

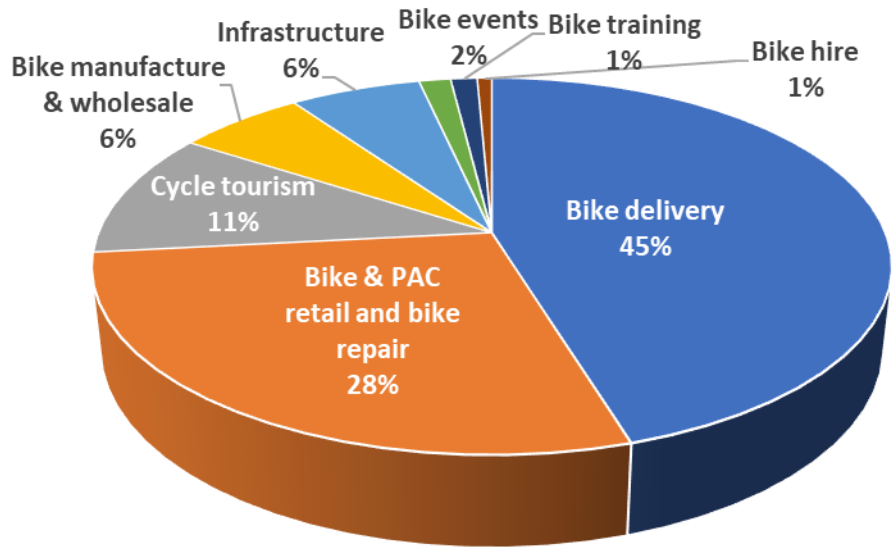
While cycle delivery jobs are typically low paid with poor working conditions (as with motorised delivery) this does not have to be the case. For example, there are cycle delivery companies in other countries which give their couriers the majority of the earnings and autonomy over their working hours[76]. This approach needs to become the norm in the future.

[74] This is lower than the previous report's estimate of 35,000. Note the original figure, derived from an ECF study, assumed a turnover for cycle tourism of £2.8 billion in 2012. We were unable to verify the source of this but the TNS study we used to estimate turnover gave a total spend on cycling overnight and day trips in Great Britain in 2015 of £1.7 billion (of which £520 million was attributable to cycling).

[75] The number of cycling tourism jobs is significantly reduced in the current estimate while we have increased the number of bike manufacture, infrastructure, cycle hire and bike delivery jobs. The previous figure of 35,788 cycling tourism jobs was based on a 2014 European study which assumed total cycling tourism turnover in 2012 was 2.8 billion Euros (ca. £2.7 billion at 2020 prices).

[76] Finger T (2018) Cycle food delivery services in the gig economy – precarious employment 2.0. Bike Citizens Magazine.

Figure 1: Breakdown of estimated current cycling jobs (using average of lower and upper estimate for infrastructure)



4. Levels of cycling to meet net zero targets

In 2020 the UK government announced a target to reduce carbon emissions across the whole economy by at least 68% by 2030[77]. Both the Scottish and Welsh governments (although not as yet the Department for Transport in England) have concluded that it will be necessary to reduce car mileage in order to meet this target. Estimates of the necessary reduction in car mileage, from various sources, are 20-30%. We have estimated the potentially significant contribution that could be made by increased cycling. Of the mileage that needs to be shifted to other modes, around 28% is for trips of 2-10 miles and we assume around half of this could be shifted to cycling using either conventional bikes or (increasingly) e-bikes.

The methodology and assumptions are detailed in Appendix C. Note that:

- We have taken two scenarios which represent a lower and upper bound of estimates. The figures in Table 9 below represent an average of the two.
- Estimates are based on travel cycle trips only which replace car trips and reduce carbon. The estimates take no account of any increase in leisure trips which are not relevant to carbon targets.
- The difference in the cycling statistics in the four nations makes direct comparison of cycling levels difficult. England has the most comprehensive statistics, which we have used as the basis for the methodology. Estimates for Wales, Scotland and Northern Ireland are less robust.

The results are shown in Table 9. We estimate that a modal shift to cycling, for trips that are of cyclable length (2-10 miles), could make a significant contribution to achieving the necessary car mileage reduction.

[77] Department for Business, Energy and Industrial Strategy (2020). UK sets ambitious new climate target ahead of UN summit. Press release, 03/12/20.

This would result in a near five-fold increase in travel cycling trips in the UK (390% on average) and a more than 8-fold increase (690% on average) in travel cycling km. Although this level of increase sounds high, it should be noted that this is from a very low starting point with only 6% of people cycling for travel at least once a week in England in 2019 and only 2% cycling for travel at least five times a week. The comparable figures in the other nations are even lower. This increase by 2030 results in levels of cycling that are still modest (4-7% mode share) compared to levels in many European countries (e.g. Austria 7%, Belgium 10%, Germany 12%, Netherlands 27%)[78].

The increase in cycling by 2030 would need to be higher in Wales and Northern Ireland, due to their generally higher levels of car use and lower levels of cycling, and vice versa in England (where a higher proportion of residents live in urban areas).

Table 9: Estimates of travel cycling trips and distance in each nation in 2019 and average increase needed by 2030 (average of lower and upper bound estimates) to meet carbon targets. Distance/trips rounded to nearest 10 million and % increase rounded to nearest 10%. Range for UK shown in parentheses. (see Appendix C for methodology and assumptions)

Estimate of cycle distance/trips in 2019 and 2030	England	Wales	Scotland	N. Ireland	UK
Cycle distance (m km/y)					
Travel cycle km in 2019	2,620	70	220	80	2,980
Travel cycle km needed in 2030 (average)	19,780	1,100	1,810	850	23,530 (17,520-29,530)
% increase (average)	660%	1,510%	720%	1,020%	690% (350-750%)
Cycle trips (m trips/y)					
Travel cycle trips in 2019	660	20	60	20	750
Travel cycle trips needed in 2030 (average)	3,120	170	280	130	3,710 (2,850-4,560)
% increase (average)	370%	880%	410%	590%	390% (200-430%)

It is important to note that this increase is not a forecast of what is *likely* to happen based on current trends, but an estimate of what levels of cycling are *needed* to replace car trips of cyclable length by 2030 as part of an overall strategy to meet carbon targets. If these car trips/mileage are *not replaced* by cycling trips/distance (and we are implicitly assuming that there will need to be similarly large increases in public transport to accommodate the longer car journeys) then there will need to be more onerous restraints on car travel, for example through higher levels of road pricing or restrictions on road traffic, than would otherwise be the case.

While our estimates are based on travel cycle trips and distance only, several factors, including the reduction in car traffic on the roads, the likely improvements in cycle infrastructure as well as the greater uptake in e-bikes by 2030, makes it likely that any increase in cycling for travel will be accompanied by an increase in cycling for leisure. These estimates also don't take into account the

[78] European Cyclists Federation. Cycling Data Map. Based on data published in 2014. Also see Figure 18 of cycling frequency in the EU28 in 2014 from Steenberghen T et al (2017) Support study on data collection and analysis of active modes use and infrastructure in Europe. Report for the European Commission.

likely increase in active travel trips associated with an increase in public transport trips (also necessary to meet carbon targets) e.g. combined cycle/rail trips. So if cycling is increased to help meet carbon targets, it is likely that there will be even higher levels of total cycle trips and distance than that shown in the table. This will have a positive knock-on effect on economic benefits and jobs.

The targets for active travel set by the UK Government for England (and the mode share targets in Wales) also imply significant increases in cycling, although well within the figures estimated in Table 8. See Appendix D for details.

The increased levels of cycling would replace an estimated 6-14 billion car vehicle km a year in 2030. In addition to reduced car mileage, cargo bikes and e-cargo bikes have the potential to replace 7.5% of urban van mileage[79]. Based on 2019/20 levels of van traffic in the UK[80] and assuming 30-40% of total van traffic is in urban areas, this would be equivalent to a reduction of a further 2-3 billion van vehicle km, and associated congestion, carbon and air pollutant emissions.

5. The future bicycle economy in the UK

Increasing cycling to meet carbon targets will produce significant economic benefits, both in terms of direct output (retail, wholesale, manufacturing, tourism and construction of infrastructure), the wider benefits (health, pollution etc) and benefits to business (congestion-relief, productivity, improved business performance etc).

Sales of cycling products and services and bike production are likely to experience significant growth as a result of higher cycling levels. Three European cycling associations have forecast bike sales in Europe to increase by 47% over the ten years to 2030 following post-Covid investments in cycling[81].

The ECF estimate that a doubling of bicycle mode share corresponds to a 42% increase in turnover for bike retail (bicycle sales, bike accessory sales and bike repair)[82]. They assume that a 42% increase in retail turnover leads to a 42% increase in industry turnover, which in turn leads to an increase in bike industry employment.

We estimate that bike mode share in the UK could increase from 1.7% in 2019[83] to around 4-7% by 2030. This is a result of the increased trips shown in Table 9 that we estimate are necessary to meet carbon targets. Using the ECF's rule of thumb, this level of increase would correspond to a roughly 60-130% increase in turnover, GVA and employment. Table 10 shows that, based on this, the GVA from bike & PAC retail/services and manufacture/distribution in the UK could potentially reach around £1.5-2.0 billion by 2030.

[79] Cairns S and Sloman L (2019) Potential for e-cargo bikes to reduce congestion and pollution from vans in cities. Transport for Quality of Life report for the Bicycle Association. July 2019.

[80] We have taken the GB van traffic figures for 2019/20 of 89 billion km from DfT statistics and increased by 4% for Northern Ireland. Department for Transport (2022) Road Traffic Statistics. Table TRA8905b: Light Commercial Vehicle traffic (vehicle kilometres) by local authority in Great Britain, annual from 1993

[81] Cycling Industries Europe (2020) Bike sales forecasted to grow up to 30 million per year by 2030 following post-Covid investments in cycling. Web article, 02/12/20.

[82] Blondiau T and van Zeebroeck B (2014) Cycling Works. Jobs and Job Creation in the Cycling Economy. Report for the European Cyclists' Federation.

[83] Our estimates use the number of trips (cycle and total) per person in England from the National Travel Survey. For the other nations we have pro-rated the total number of bike trips and assumed that each nation has a similar number of total trips per person as England.

In addition, this could generate an additional £670-930 million in VAT revenue for the government[84].

Table 10: Estimated value of bike manufacture, and sales of cycling products and services Gross Value Added (GVA) to the UK economy in 2019 and 2030 based on increased bike mode share to meet carbon targets (rounded to nearest £10 million)

Bike economy sub-sector	GVA 2019 (£ million)	GVA 2030 (lower) (£ million)	GVA 2030 (upper) (£ million)
Bike & PAC retail sales and repairs/services	490	840	1,170
Bike & PAC manufacture and distribution	350	610	850
Total	**840**	**1,450**	**2,020**

These figures shown in Table 10 likely underestimate the future economic benefits due to the large potential growth in e-bike sales. Because e-bikes cost substantially more than the average conventional bike any growth in sales will increase bike retail turnover significantly. And there is evidence that with increasing bike mode share the average bike price goes up (as people trade up)[85].

While e-bike volume sales in 2022 were almost double the pre-Covid period, the potential for further growth in the UK market is enormous. For example, e-bikes accounted for only around 6% of all bicycles sold in England in 2021, compared to the Netherlands where e-bikes accounted for over 50% of all bicycles sold[86]. The market share by volume has also grown rapidly in Germany, Austria, Switzerland and Belgium where it reached over 30% in 2021[87]. It is estimated that about half of all bikes sold in the EU will be electric by 2025[88]. Similarly e-cargo bikes in the UK saw volume sales increase by 40% in 2022[89].

These figures also do not take into account the significant potential from reshoring manufacturing capacity from overseas. There has already been a more than doubling of production of conventional bikes in the UK since 2016 which does not take account of imported frames which are assembled by individual cycle dealers[90]. However the proportion of imported bikes remains high, estimated at around 97% of bikes sold in the UK. While the UK is Europe's second largest market for bicycles in terms of units sold, accounting for 16% of all bikes sold across the region[91], the UK hosts less than 1% of the EU's bicycle production[92]. Contrast this with Portugal which produces one quarter of Europe's cycles, with less than 2% of Europe's population[93].

[84] Assuming the same VAT rate and proportion of retail/repair turnover in 2030 as current levels.
[85] Ibid.
[86] Worthington J (2022) A Bumpier Ride. Challenges and prospects in the UK Cycling Market. Report for the Bicycle Association. January-June 2022 [available to members only]
[87] van Schaik J-W (2022) Europe's leading e-bike markets maturing rapidly. Article in Bike Europe, 20/10/22.
[88] Dempsey H (2021) Half of all bikes sold in Europe will be electric by 2025, predicts manufacturer. Article in The Financial Times, 09/07/21.
[89] Ibid.
[90] Bicycle Association (2021). Personal Communication with Peter Eland, Bicycle Association, 25/08/21.
[91] Bicycle Association (2022). Personal Communication with Scott Cain, Bicycle Association, 06/10/22.
[92] CONEBI (2017) European Bicycle Market. 2017 Edition.
[93] Bicycle Association (2022). Personal Communication with Scott Cain, Bicycle Association, 06/10/22.

The Bicycle Association's Bike Valley project is investigating the potential for reshoring the production of frames, batteries and drives, and smart and connected bikes to the UK[94]. This would help develop the high value manufacturing sector in the UK, building on the considerable skills and technology that currently exists, including in adjacent sectors such as electric vehicles. Although there are no figures on the value of reshoring, the potential is clearly large with only 3% of bikes currently sold in the UK manufactured here.

6. The future wider benefits of cycling in the UK

Based on the estimated increase in cycling trips needed to meet carbon targets (Table 9) we have estimated the wider economic benefits in 2030 using the Department for Transport's Active Mode Appraisal Toolkit (AMAT)[95]. Table 11 below shows that the wider benefits of this increase in cycling levels are of the order of **£73-146 billion (2020 prices) in 2030**. Due to the large uncertainties in the underlying assumptions these estimates should be regarded as indicative only and are not directly comparable with those in Table 6 due to differences in the methodology and tools used.

Table 11: Summary of the value of the wider benefits of cycling to economy in the UK in 2030 based on the increase in cycling levels to meet carbon targets (£ million rounded to nearest £10 million) (2020 prices). Details of assumptions used are given in Appendix E.

Wider Benefits	Economic value Lower bound (£million)	Economic value Upper bound (£million)
Reduced premature death	42,870	92,650
More attractive journey surroundings	15,970	22,470
Reduced congestion	6,860	14,830
Less absenteeism due to illness	6,180	13,350
Fewer collisions	780	1,680
Lower air pollutant emissions	270	600
Lower greenhouse gas emissions	140	300
Less noise	50	110
Reduced road maintenance costs	40	90
Total	73,160	146,070

Combining the figures in Tables 10 and 11 this gives a **total future economic benefit of cycling of around £75 billion to £149 billion in the UK in 2030** based on increased cycling levels to help meet carbon targets. This includes an additional £670-£930 million of VAT revenue to government.

This annual benefit is likely to be substantially larger than the cost of constructing a comprehensive cycle network across the UK. For example, Active Travel England estimates that £18 billion will be needed to deliver the infrastructure for an England cycling 'masterplan' by 2030[96]. The Department

[94] Bicycle Association (2022) Reshoring, Onshoring, Bike Valley & Hope. Bicycle Association podcast, July 2022.

[95] The AMAT tool is designed to assess the overall benefits and costs of proposed cycling and walking interventions. Department for Transport (2020) Active Transport Appraisal Toolkit User Guide It is a two-case model requiring a 'before' and 'after' case in terms of cycling trips and type of infrastructure.

[96] Laker L (2022) £18 billion required to deliver cycling masterplan, says Boardman. Article in Cycling Industry News, 07/09/22.

for Transport's (DfT) own estimates are that for every £1 of public money spent on cycle infrastructure, there is £5.50 worth of social benefit[97].

7. Additional jobs from increasing cycling in UK

The estimated increase in cycling to meet carbon targets will create thousands of new jobs in the bike industry. A recent report by European cycling organisations estimates that employment in the bike industry is set to grow by over 200% (more than treble) by 2030[98].

A joint report by UNEP, WHO and UNECE estimated the number of jobs associated with cycling in 37 cities including London, and the potential if the cycling mode share in a given city was similar to Copenhagen's (26%)[99]. Based on our estimates of increased cycling levels in Table 9 the UK's cycling mode share would increase from existing levels of 1.7% in 2019 to approximately 4-7% by 2030. Following the UNEP methodology this would imply around **81,000-130,000 additional cycling related jobs** in the UK by 2030 (on top of the existing jobs estimated in Table 8). This would represent an average increase of around 160% which is of a similar order to that predicted in Europe. In Table 12 below we have provided a breakdown of future additional cycling jobs based on a scaling up of the current jobs.

Table 12: Estimates of *additional* future cycling jobs (Full Time Equivalent) in the UK in 2030 based on the same proportional split of existing jobs (rounded to nearest 100)

Cycling sub-sector	Estimated number of FTE jobs
Bike and bike accessory sales and bike repair	22,800 – 36,600
Bike manufacture and wholesale	5,000 – 8,000
Infrastructure	5,100 – 8,200
Cycle tourism (holidays and day trips)	8,800 – 14,000
Bike delivery	36,700 – 58,900
Bike events	1,200 – 2,000
Bike training	1,000 – 1,700
Bike hire	600 – 900
Total	81,200 – 130,100

Over time, some of these jobs, in bike delivery, would replace jobs in motorised delivery. However, bike delivery (using e-cargo bikes) has the potential to be considerably more healthy than van delivery work.

This ballpark estimate may underestimate the total potential as well as the proportional split due to the following:

- Significant potential for an increase in high value jobs in design and production (Bike Valley). It is estimated that every 1,000 bicycles reshored/produced each year in Europe creates three to five skilled jobs[100]. And, for every 1,000 e-bikes that are reshored/produced in the region

[97] Raje F and Saffrey R (2014) The value of cycling. Report by Phil Jones Associates and Birmingham University for the Department for Transport.
[98] Cycling Industries Europe (2020) New European Cycling Industry Forecast Shows Huge Growth in Bike and E-bike Sales. Article 02/12/2020.
[99] UNECE, UNEP and WHO (2017) Riding towards the green economy: cycling and green jobs. A joint report by UN Environment-WHO-UNECE, 29/12/17.
[100] CONEBI (2021) European Bicycle Industry Booming. News release, 12/07/21.

each year, between six and nine skilled jobs are generated. Based on the estimated increase in bike units sold in 2030, assuming that 30% are electric, **if an additional 10% of these bikes were reshored this would create around 2,000-3,000 additional high value jobs**[101].

- Significant potential for increased jobs in bike logistics. Between 2015 and 2016 there was a 30% growth in the number of staff working in cycle logistics companies according to a survey by the European Cycle Logistics Federation[102]. With an estimated 2,000 cargo bikes sold for commercial use in the UK in 2020, this compares to 100,000 a year in Germany or 50,000 a year in France[103] illustrating the potential for growth.

- Significant potential for increased jobs in cycle tourism. Unlike in many continental European countries where there are many long-distance off-road cycle routes, Britain's cycle infrastructure is patchy, particularly in visitor areas such as national parks and coastal resorts. For example, England has 15 national trails, but only two of them are cyclable from end to end: the Pennine Bridleway and the South Downs Way. The National Cycle Network (NCN) managed by Sustrans has expanded from 500 miles in 1995 to over 12,000 miles in 2020 and the goal is to provide a connection between every community of at least 10,000 people in the UK[104]. In 2020 Cycling UK launched a 350km off-road bike route in southern England and has a goal to create a network of long-distance off-road routes across Great Britain[105]. An expansion of the NCN and more long-distance off-road routes would encourage more people, particularly families, to take cycling leisure trips or holidays.

Many of these cycling jobs will be provided by small businesses and local retailers, helping regenerate high streets and the local economy in a way that is more effective than large scale infrastructure projects. Cycling jobs can provide an early win while other low carbon sectors that lack capacity, such as building retrofit, get up to speed. Moreover, cycling jobs can be targeted in deprived areas and at socially disadvantaged groups (e.g. through the creation of cycle apprenticeships and training schemes).

8. Necessary conditions to achieve economic benefits and create additional jobs

8.1 Direct support for the cycle industry

Despite this potential for economic growth and future green jobs there are still many barriers limiting growth of the cycling sector. Participants from the cycle industry, local government and the London Cycling Campaign, who took part in a Bicycle Association organised roundtable in London, identified a number of issues limiting expansion of the sector[106] including the following:

- Existing support/funding for cycling has limited visibility, is poorly targeted and administratively burdensome.

[101] Author's own assumption representing a hypothetical estimate.

[102] Cairns S and Sloman L (2019) Potential for e-cargo bikes to reduce congestion and pollution from vans in cities. Transport for Quality of Life Report for the Bicycle Association, July 2019.

[103] Butler S (2021) Cycling brands gear up for rapid growth in UK cargo bike market. Article in The Guardian, 24/07/21.

[104] Sustrans (2021) Paths for Everyone: Three years on. Report by Sustrans, 16/02/22.

[105] Jones M (2020) New 350km off-road bike route launched in southern England Cycling UK Press Release, 28/08/20. .

[106] Bicycle Association (2022) Personal Communication with Kirsti Ratti, Bicycle Association, December 2022.

- Difficulties in recruiting new staff and a lack of diversity in the sector. For example women occupy just 8% of the UK cycle industry's workshop-based roles[107].
- A lack of training and relevant courses/apprenticeships.
- A lack of suitable and affordable premises on the high street.

Improving diversity and inclusion in the sector would not only make it fairer but would help boost productivity. For example:

- Training more female mechanics would address skills shortages, in particular to support forecast e-bike growth (an estimated 90,000 technicians will be required to service electric cars by 2030)[108]. Diverse organisations are more successful at attracting and retaining talent[109].
- Research shows that companies with the most gender-diverse executive leadership teams are 47% more profitable than the least diverse teams[110], while benefiting from an enhanced organisational reputation and ability to attract and retain more female (and male) talent[111].
- International studies show that companies with a gender inclusive business culture have a 59% probability of achieving more creativity, innovation and openness[112].

The BA's Diversity in Cycling project[113], launching March 2023, "seeks to unite the industry behind a shared commitment to address diversity, equity and inclusion to help build a sustainable, resilient, competitive cycling industry". However, this would benefit from government support as part of wider workplace equality initiatives.

The government has set an ambition for two million green jobs[114] in the UK by 2030[115] and aims to support up to 250,000 of these through a 'Ten Point Plan for a Green Industrial Revolution' and a Green Jobs Taskforce[116]. Transport, including cycling, is cited by the Taskforce as a sector where 'change will be crucial to meeting net zero'. Many of the Taskforce's themes and recommendations - for example, supporting a 'just transition' into low carbon transport jobs; reducing inequalities in access to education, training and jobs; green apprenticeships and funding - would address some of the issues identified by the cycle industry and stakeholders.

There are also specific measures for local government which can help address the lack of affordable premises for bike shops. For example, integrating bike retail into lower rental multimodal hubs together with safe cycle storage and parking can ensure the viability of bike shops on the high street (or possibly located behind the high street or in appropriate low-cost premises).

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[107] Bicycle Association (2021). 2021 Census, unpublished.

[108] Kirwin J (2021) IMI forecasts 38k shortfall of technicians by 2030 as EV rollout accelerates Article for Motor Trader, 10/11/21.

[109] Catalyst (2020) Why diversity and inclusion matter. Report by Catalyst, 25/06/20.

[110] FP Analytics (FPA) (2020) Women as Levers of Change. Report by FPA, March 2020.

[111] Workplace Gender Equality Agency (2018) Workplace gender equality: the business case Report by the Workplace Gender Equality Agency, Australian Government, 12/11/18.

[112] International Labour Organisation (2019) The business case for change. Report by ILO, May 2019.

[113] Forthcoming, see Diversity in Cycling page on Bicycle Association website.

[114] Defined by the Green Jobs Taskforce as "employment in an activity that directly contributes to - or indirectly supports - the achievement of the UK's net zero emissions target and other environmental goals, such as nature restoration and mitigation against climate risks."

[115] Department for Business, Energy and Industrial Strategy (2020) UK government launches taskforce to support drive for 2 million green jobs by 2030. Press release, 12/11/20.

[116] HM Government (2020) The Ten Point Plan for a Green Industrial Revolution. November 2020.

To realise the potential for reshoring of bike production there also needs to be access to funding for innovation in the cycle industry[117]. The Office for Zero Emission Vehicles has provided hundreds of millions of pounds of funding to support ultra-low emission automotive technologies[118]. There needs to be greater Government recognition that cycling is also part of the solution for cleaner road transport and decarbonisation. While the cycle industry can lead on technology and innovation, Government can provide support and incentives.

The recent Skidmore Review shows that the UK can reap the benefit of green growth, but this will need government support to business in certain key areas[119]. For example, the review recommends "that the government commits to long-term funding for active travel, to ensure that more people will benefit." It cites the example of the French government scheme which provides residents (with priority for low-income urban groups) with grants of up to €4,000 for trading in an old car and purchasing a bicycle or e-bike instead, or up to €400 if not swapping from a vehicle[120].

8.2 Indirect support for the cycle industry

Underlying all of this is the strategic necessity of growing cycling to deliver carbon targets and other government policy aims. This needs binding targets for traffic and carbon reduction at all levels of government, combined with more investment in cycling and other sustainable modes to ensure there are alternatives to driving.

There will need to be increased and sustained investment in high quality walking and cycling infrastructure, both within urban areas as well as longer distance cycle routes between settlements, particularly in national parks and coastal areas. Many people, particularly women, won't cycle unless they feel safe enough to do so. As well as high quality infrastructure all built up areas need to be made safer for cycling through a combination of reallocation of road space and a reduction in the default speed limit to 20mph.

Alongside additional funding, there is a need for disincentives to driving such as road pricing or controls on parking. One of the most effective ways to get the high levels of modal shift required, as well as to generate funds to improve sustainable alternatives, is a national system of road pricing[121]. This could replace fuel duty, the burden of which will increasingly fall on those least able to afford electric cars and vans. Currently the economic disbenefits of road traffic (carbon, air pollution, road casualties, noise etc) far outweigh the revenue generated by fuel duty and Vehicle Excise Duty therefore it is only fair to recoup some or all of these costs to society. For this reason some have referred to road pricing as "a reduction in the 'road use discount'"[122]. A fraction of this revenue could

[117] For example, the Government's Innovation Funding Service has categories for aerospace, automotive, marine and rail transport as well as 'other transport' but the funding for the latter in January 2023 was also for the automotive or aerospace sector.

[118] For example, as of July 2018 they had awarded over £300 million in grants via Innovate UK (now UKRI) into ultra-low emission technologies. Department for Transport (2018) Road to Zero. July 2018.

[119] Skidmore C (2023) Mission Zero. Independent review of net zero by Rt Hon. Chris Skidmore MP. January 2023.

[120] Ibid.

[121] Sloman L and Hopkinson L (2019) An Eco Levy for driving: cut carbon, clean up toxic air, and make our towns and cities liveable. Transport for Quality of Life Briefing for Friends of the Earth, November 2019.

[122] Barry M (2022) Submission to Senedd Climate Change Committee, Professor Mark Barry, May 2022.

be ringfenced to fund the £18 billion investment identified by Active Travel England which will help build 3,000 miles of new cycle route by 2025[123].

9. Conclusions

The cycle industry and the use of its products and services currently contributes around £7.5 billion in economic value and supports around 64,000-69,000 green jobs, many of them place-based, and involving a wide range of skills.

The cycle industry is strategically important for achieving many key government policy goals, including carbon reduction. A shift to higher levels of cycling (still modest by international standards) can help achieve our legally binding national carbon targets in a cost-effective way. This reduces the need for more onerous restraints on car travel and has significant public health benefits.

A five-fold increase in cycling trips across the UK could make a significant contribution towards reducing car mileage and achieving the UK's carbon targets. If achieved, this could generate around 100,000 additional jobs and up to £149 billion per year in economic benefits by 2030. This is a significant proportion of the 2 million green jobs the Government wants to support by 2030 and represents a substantial green dividend.

The cycle industry is an important green growth sector. To achieve the economic benefits and green jobs identified in this report, UK Government and the cycling industry will need to work together: Government actions can increase demand, while the cycle industry, with appropriate strategic industrial support, can ensure supply.

Priority actions for Government are listed below. Actions 1, 5 and 6 will increase demand, while actions 2, 3 and 4 will assist the cycle industry to increase supply.

1. Funding for grants to drive demand for e-bikes and e-cargo bikes to replace car and van trips.
2. Funding for innovation in the UK's bike, e-bike and Light Electric Vehicle industry in order to grow the UK's capacity and market share.
3. Targeted funding and courses/apprenticeships for the cycle industry to support current and future skills requirements, career progression and a 'just transition' for workers in high carbon sectors.
4. Action to reduce inequalities in access to education, training and jobs, to increase representation of women and other under-represented groups.
5. Increased and sustained funding for high quality walking and cycling infrastructure, with support for reallocation of road space to cycling and a reduction of the default speed limit to 20mph in built-up areas, to make streets safer for cycling.
6. Targets for traffic reduction, to drive policies to reduce road traffic and carbon, for example through measures such as road pricing which would disincentivise driving and generate revenue for sustainable alternatives.

Investment in measures to encourage more cycling and support to grow the sector will be far outweighed by the economic benefits generated by more cycling and the cycle industry. This is an investment that is good for business, good for the UK economy and which can support the future resilience, competitiveness and sustainability of the sector.

[123] Laker L (2022) £18 billion required to deliver cycling masterplan, says Boardman. Article in Cycling Industry News, 07/09/22.

On the demand-side it is increasingly important that cycling is embedded as a solution in strategies across Government, spanning policies relating to health, climate, environment, trade, business, and communities, not just transport.

On the supply-side, the cycling sector should also feature in UK industrial policy. Cycling is already a driver of economic growth today. Just imagine its potential when properly supported through policy as a critical and strategic industry for the UK.

A forthcoming report from the Bicycle Association will set out the role of UK industrial policy in building the bicycle economy in order to reap a green economic dividend and around 100,000 green jobs.

Appendix A: Methodology and assumptions used to estimate current economic benefits

Table A.1: Source of cycling statistics in the UK

Nation	Cycling statistics	Source
England	% adults who cycle (travel, leisure, any purpose) Nov 2018-Nov 2019	Department for Transport Table CW0302 (a)
Wales	% adults who cycled at least once a week for travel April 2019-March 2020	Welsh Government Active Travel Statistics (b)
Scotland	% adults who cycled (transport, leisure, as main mode) in the previous 7 days in 2019	Cycling Scotland 2021 Annual Cycle Monitoring report (c)
N. Ireland	% adults who cycled in the last 4 weeks in 2019/20 (and of those % who had cycled at various frequencies)	Cycling in Northern Ireland 2019/20 (d)

(a) https://www.gov.uk/government/collections/walking-and-cycling-statistics
(b) https://gov.wales/active-travel-walking-and-cycling-april-2019-march-2020-html
(c) https://www.cycling.scot/mediaLibrary/other/english/9444.pdf
(d) https://www.infrastructure-ni.gov.uk/publications/cycling-northern-ireland-201920

Table A.2: Assumptions and methodology used to estimate current benefits

Economic benefit	Methodology	Assumptions
Wider benefits		
Value of loss of life	WHO HEAT tool v5.0[124]	No. adults (age 20-64) who cycled at least once a week in UK in 2019/19 was ~4.2 million Adults who cycled 5 times a week took 480 trips/y, adults who cycled 3 times a week took 288 trips/y, adults who cycled once a week took 96 trips/y and adults who cycled once a month took 24 trips/y. The average distance of a cycle trip in 2019 wa 5.2km based on National Travel Survey. Each cyclist cycles on average 4.7km/day (based on estimates of cycling km and no. cyclists) Economic values in USD converted to GBP using a 2020 exchange rate of US$1=£0.87
NHS savings	Sports England MOVES tool v2.0 [125]	No. adults who cycled at least once a week in UK in 2019/20 by approximate age range: ~1.6 million (16-30), ~1.9 million (31-45), ~1.6 million (46-60) and ~0.9 million (61+) Some activity before starting cycling Moderate activity when cycling Each age group cycled for 0.3 hrs/day, 7 days/week

[124] The Health Economic Assessment Tool (HEAT) developed by the World Health Organization estimates the mortality rate reduction and number of deaths prevented each year by cycling. The tool assumes a reduction in mortality risk for an exposure to cycling (and walking) and used a value of a statistical life to monetise the number of deaths per year prevented by cycling participation. It estimates the impacts for the age group 20-65 only because the evidence base for the health effects of physical activity on young people is not as large as that for adults, while older age groups are excluded because countries often lack mobility data for older age groups
[125] Based on Sports England MOVES model which shows the return on investment for health of sport and physical activity.

		Assume cycle speed of 14 km/h for consistency with HEAT
Productivity gains (reduced absenteeism)	Reduction in sick days due to cycling * no. employed cyclists aged 20-64 * GVA per filled job in each nation	Sickness absence rate in 2019 of 1.9%[126] With 252 working days/year the average employee had 4.8 sick days in 2019[127] Employees who are physically active take 27% fewer sick days/y[128] Each cyclist takes 1.3 fewer sick days per year. GVA in England in 2019 = £57,583 per filled job, GVA in Wales = £46,658, GVA in Scotland = £54,662 and GVA in Northern Ireland = £48,565[129] 76% working age adults employed in 2019 No. adult cyclists of working age in the UK (20-64) =~4.2 million
Pollution reduction	Pollution avoided multiplied by TAG damage costs	Estimated no. cycle trips for travel in UK in 2019/20 = 751 million 50% cycle trips for travel would otherwise be made by car[130] 1,492 million driving km avoided by cycling in 2019/20 Fleet weighted emission factors for 2019 for exhaust and non-exhaust emissions of NOX and PM[131] TAG central damage costs for pollutants[132] Adjusted TAG 2010 values to 2020 using Bank of England inflation calculator
Congestion relief	Driving km avoided multiplied by TAG economic value	Avoided driving km as before TAG values for average Marginal External Costs weighted by % traffic by type of road for England, Wales, Scotland and Northern Ireland, p/km[133] Adjusted TAG 2010 values to 2020 using Bank of England inflation calculator
Greenhouse gas reduction	GHG emissions avoided multiplied by TAG economic costs	Avoided driving km as before CO2e emission factors from Defra for 2019 average cars[134] TAG values for high value of CO2e in 2020[135]
Cycling tourism GVA		

[126] ONS (2021) Sickness absence in the UK labour market.

[127] We have used this more conservative figure rather than the higher figure of 5.9 from the CIPD. CIPD (2019) Health and Safety at Work Survey 2019.

[128] The National Institute for Health and Care Excellence (NICE) figures quoted in Transport for London. Walking and cycling: the economic benefits. Summary pack.

[129] ONS (2021) Labour Productivity. Table B3

[130] Conservative estimate based on the fact that 62% non-bike trips in England were car trips in 2019.

[131] National Atmospheric Emissions Inventory. Emission factors for transport

[132] Department for Transport (2021) TAG Data Book. Table A.3.2.1

[133] Department for Transport (2021) TAG Data Book. Table A.5.4.2a

[134] BEIS and Defra (2020) Greenhouse gas reporting conversion factors for 2019

[135] Department for Business, Energy and Industrial Strategy (2021) Valuation of greenhouse gas emissions: for policy appraisal and evaluation. We adopted the high values on the basis of the urgency and seriousness of the problem.

Cycling holidays and day trips GVA	Tourism industry estimate for attributable expenditure in GB in 2015[136], assuming this is a typical value for a non-pandemic year combined with GVA/turnover factor	Increased by 15% based on the increase in total tourism revenue 2015-2019[137] Added estimate for Northern Ireland assuming the same proportion of cycling to total tourism expenditure as the rest of the UK[138]. Used GVA/turnover factor for accommodation and food services activities in 2019 of 56%
Cycle events GVA (a)	Own estimate based on economic value per large/small cycling event and assuming a no. of large and small events in a typical year combined with GVA/turnover factor	Assume each large event (>1,000 participants/spectators) generates £1.17 million (2020 prices) and each small event (< 1,000 participants/spectators) generates £132,000 (2020 prices) based on average of 17 events in Scotland[139] In 2019 assumed there were around 315 events in England, 20 in Wales, 20 in Scotland and 3 in Northern Ireland[140], of which an assumed 90% were small events. Same GVA factor as above
Cycle infrastructure GVA	Estimated spend on emergency active travel fund in each nation in 2020 combined with GVA/turnover factor	England: assumed spend of £319 million in 2020 (DfT Emergency Active Travel Fund[141] and TfL allocation for Healthy Streets[142]) Wales: assumed spend of £30 million[143] Scotland: assumed spend of £100 million[144] N. Ireland assumed spend of £4.8 million[145] Used GVA/turnover factor for construction in 2020 of 38%

[136] This study estimated the 'attributable expenditure' on day or overnight trips motivated by being able to participate in a specific activity such as cycling when making the decision to take the trip. The study estimates the spend attributable to cycling on domestic holidays and day trips in England alone was £319 million in 2015, and we assumed the same regional allocation for overseas visitors holidays. TNS (2015) Valuing Activities: Final Report. Report produced for Visit England, Visit Scotland and Visit Wales.

[137] UK tourism revenue was £127.4b in 2015 UK Tourism Statistics 2016 and £145.9b in 2019 UK Tourism Statistics 2019

[138] Total tourism expenditure by nation from Deloitte and Oxford Economics (2013) Tourism: Jobs and growth. The economic contribution of the tourism economy in the UK. November 2013.

[139] Zofka I (2013) The Value of Cycle Tourism. Opportunities for the Scottish economy. Report for Transform Scotland. June 2013.

[140] Sportive.com (2022) Cycling Events Calendar. List of Sportives January – December 2019.

[141] Tranche 1 was announced in May 2020. Tranche 2 in Sep 2020. Although many of the Tranche 2 schemes would not have been delivered until 2021 or 2022, there is also funding via local authorities and developer funding which is not included here. Department for Transport (2020) Active travel fund: local transport authority allocations. 20/05/22.

[142] Transport for London (2021) Delivering the London Streetspace Programme and priority schemes in the Healthy Streets Programme: 2020/21. Programmes and Investment Committee, Agenda Item 13, Table 6. 20/07/21.

[143] Welsh Government (2020) Active Travel Fund Grant. Guidance to Applicants 2020-2021.

[144] Scottish Government (2020). Budget agreement reached. News article, 26/02/20.

[145] Murray J (2020) Cycling UK CAN help achieve an NI Active Travel Act. Cycling UK blog, 20/22/20.

Sales of bikes and cycling products GVA		
Bike and accessory retail sales	GVA of bikes and accessories sold in UK	Estimated turnover value from stores and online-only retailers in UK (average of 2020 and 2021) from Market Data Service with additional data for scaling up Used GVA/turnover factor for retail trade of 25%
Bike repairs/services	Sales value of bike services in UK	Estimated turnover value from stores and online-only retailers in UK (average of 2020 and 2021) from Market Data Service with additional data for scaling up Used GVA/turnover factor for other service activities of 46%
VAT revenue to government		20% taken off sales value from stores and online only retailers in the UK (average of 2020 and 2021) from Market Data Service with additional data for scaling up
Bike and PAC distribution	Back-calculation of turnover from employment estimates using a jobs/£m turnover factor from selected companies	Assumed number of jobs is of the same order of magnitude as for manufacturing and allocated to each nation in the same proportion as for manufacturing Used GVA/turnover factor for Wholesale trade, except of motor vehicles and motorcycles, of 16%
Bike and PAC manufacture	Back-calculation of turnover from employment estimates using a jobs/£m turnover factor from selected companies	Empirical evidence of jobs at around 120 bike and PAC manufacturing companies compiled by the Bicycle Association Used GVA/turnover factor for manufacture of basic and fabricated metals, machinery, motor vehicles and other transport equipment of 35%

(a) While there is potentially some overlap with the Visit Britain cycling tourism estimates, which include the spend by British residents who travel outside their local area to participate in a cycling event, this may be balanced by the cycling tourism activities not included in the Visit Britain study. These include the spend of someone travelling outside their local area to watch a cycling event, the spend of someone participating or viewing a cycling event in their local area, and the spend on cycling activities in general where cycling was only a small reason for taking a trip.

Appendix B: Assumptions and methodology used to estimate existing cycling jobs

Table B.1: Assumptions and methodology used to estimate current cycling jobs

Cycling sub-sector	Methodology	ECF factor[146] FTE/£million turnover (a)
Bike and accessory sales	ECF factor combined with average turnover for 2020 and 2021 (from Table 1). Halved the ECF factor for sales for online only retailers (b)	11.8
Bike repair	As above	21.4
Bike manufacture and wholesale	Empirical estimates by the BA of jobs associated with the manufacture of bikes and PAC in the UK and assuming similar scale of jobs in distribution	
Infrastructure lower estimate	ECF factor combined with assumed spend on infrastructure in the UK in 2020	4.7
Infrastructure upper estimate	Alternative figure using TUC factor[147] instead of ECF factor	16.5
Bike holidays and day trips	Estimate for a non-pandemic year based on ECF factor and total spend of £609 million attributable to cycling in UK in 2019, based on uplift to TNS 2015 data. Assume 60% of the spend is overnight and 40% is day trip based on the breakdown from the TNS report	11.8 (overnight) 11.6 (day trip)
Bike events	Estimate for a non-pandemic year based on ECF factor and estimated turnover from cycling events	11.8
Bike hire	ECF factor combined with no. bikes for hire in the 4 nations in 2021	20 (c)
Bike delivery/logistics	Author estimate assuming 30,000 FTE cycle delivery riders in UK[148] and allocated to 4 nations based on population	35.5 (d)
Bike training[149]	Empirical estimates on number of active instructors and FTE based on information from The Bikeability Trust, the Welsh Government and Cycling Scotland who manage Bikeability Scotland on behalf of the Bikeability Scotland Delivery Group (BSDG). Northern	

[146] Blondiau T and van Zeebroeck B (2014) Cycling Works. Jobs and Job Creation in the Cycling Economy. Report for the European Cyclists' Federation.

[147] Minio-Paluello M and Markova A (2020) Can an infrastructure stimulus replace UK jobs wiped out by COVID19 crisis? Report by Transition Economics for the TUC. June 2020.

[148] We assume Deliveroo has at least 30,000 cycle riders based on Shaw N (2020) Deliveroo is recruiting 15,000 new riders. Article in Northants Live, 28/09/20. It is assumed they have a market share of around 40% in 2021 (Uber eats and Just Eat have around 30% each). We estimate a total of around 75,000 riders in the UK, of which around 30,000 are FTE, assuming they each work around 15 hours a week.

[149] Figures for England from Bikeability Trust Annual Review 2020 plus figures for London from Talora J (2022) TfL cuts funding for cycle training courses in London. Article in The Standard, 22/07/22. Figures for Wales from Gwen Thomas, Welsh Government (personal communication). For England we assumed each instructor was 0.2 FTE based on Bikeability Trust data while for London we assumed each instruction was 0.5 FTE and for Wales 0.8 FTE. Figures for Scotland from Cycling Scotland, who manage Bikeability Scotland on behalf of the Bikeability Scotland Delivery Group (BSDG) (personal communication). Figures for Northern Ireland estimated based on the relative population of 7-11 year olds compared to England and Wales.

	Ireland figures pro-rated from Scottish figures based on relative population of children aged 7-10.	

(a) Converted from Euros using 2014 exchange rate of £1=€1.2411 and adjusted for inflation, assuming £1 in 2014=£1.145 in 2020.

(b) Assuming that online-only retailers require half the number of jobs per £million turnover.

(c) FTE per 1,000 hire bikes.

(d) Not used, estimated jobs directly.

Appendix C: Methodology and assumptions used to estimate future cycling levels

Table C.1: Assumptions used to estimate future cycling levels to meet carbon targets

Assumption	Source	Notes
20-30% of car mileage needs to be reduced by 2030 relative to 2019 (20% lower bound, 30% upper bound)	Various – CREDS, Green Alliance, Element Energy[150]	Based on the fact that the majority of cars on the road in 2030 will still be fossil-fuelled
8-10% of total car mileage can be reduced by 2030 through avoiding travel (e.g. working from home, use of remote technologies, destination shifting, better landuse planning etc.) and more carsharing. (10% lower bound, 8% upper bound)	WfH could result in a 5% reduction in car and van mileage[151]. Demand for business travel is likely to be lower post pandemic[152]. The Climate Change Committee estimate average car occupancy could increase to 1.7 by 2030.	In Sep 2022 weekday driving rates were 92-95% below pre-pandemic levels Author's own estimates of 2% reduction based on survey results Author's own estimates of 3% reduction assuming 50% of those additional car passengers previously drove
The balance of total car mileage (10-22%) and associated passenger km needs to be shifted to other modes to achieve a total reduction in car mileage of 20-30%. (10% lower bound, 22% upper bound)		
Shorter distance trips (2-10 miles) can be substituted by cycling and public transport (and trips under 2 miles can be substituted by walking).	NTS Table 0308b	50% of bike trips and 54% bike miles were associated with trips of 2-10 miles in 2019
Car trips of 2-10 miles accounted for 28% of car distance travelled in England in 2019	NTS Tables 0308a and 0308b	
50% of the mileage associated with these trips can be shifted to cycling (same for lower and upper bounds)	Author's own assumption	Assume remaining reduction in car mileage (on trips of any length > 2 miles) is achieved by mode shift to public transport
Average distance per travel cycle trip in 2019 is 3.97km (2.47 miles)	NTS Tables 0409a and 0409b	
Average distance per travel cycle trip in 2030 is 7km	Author's own assumption	Due to greater uptake of e-bikes

[150] Summary in Hopkinson L et al (2021) The last chance saloon: we need to cut mileage by at least 20%. Transport for Quality of Life Radical 2-pager, December 2021.

[151] Based on the assumption that 37% of survey respondents who expected to work from home more often in the future worked from home 50% of the time. Stantec (2021) Home working socio-economic analysis research findings. 2021. Report for Transport Scotland.

[152] A survey of 465 decision makers for domestic business travel in the UK on the impact of the pandemic on business travel. Lowe G (2021) Business Travel during Covid 19: A survey of UK businesses. An IPSO Mori survey for Department for Transport, 13/08/21.

Appendix D: Levels of cycling needed to meet government targets

We have estimated the levels of cycling to meet current government targets in England, namely:

Gear Change (2020): Cycling and walking will be the natural first choice for many journeys with half of all journeys in towns and cities being cycled or walked by 2030.

CWIS2 (2022): increase the percentage of short journeys in towns and cities that are walked or cycled from 41% in 2018 to 2019 to 46% in 2025; double cycling, where cycling activity is measured as the estimated total number of cycling stages made each year, from 0.8 billion stages in 2013 to 1.6 billion stages in 2025[153]

Active Travel England also have a strategic aim (similar to the Gear Change target) to increase levels of walking and cycling to 50% of journeys in towns and cities by 2030[154]. We estimate that in 2018/19 around 30% of trips in urban areas in England were by walking or cycling (28% and 2% respectively)[155].

We have attempted to estimate a ballpark percentage increase in trips associated with ATE's strategic aim, which is shown in Table D.1 below, together with the increase in stages associated with the CWIS2 target for 2025.

Because the ATE target does not specify the split between walking and cycling modal share, we have estimated cycling levels based on two scenarios: (1) where walking/cycling modal share increases in the same proportion, and (2) where the cycling modal share increase at twice the rate of walking. The methodology and assumptions are shown below in Table E.2.

Table D.1: Estimates of the percentage increase in cycling by 2025 and 2030 associated with government targets relative to 2019 levels (stages/trips rounded to nearest 10 and % increase rounded to nearest 10%)

Target	Statistic/estimate	2018/19	2025/2030	% increase
CWIS2: Increase in stages by 2025	No. cycle stages (million)	960[156]	1,600	70%
ATE: Increase in cycling in urban areas by 2030 (scenario 1)	No. cycle trips in urban areas (million)	620 (a)	1,040 (b)	70%
ATE: Increase in cycling in urban areas by 2030 (scenario 2)	No. cycle trips in urban areas (million)	620 (a)	2,080 (c)	230%

(a) Ballpark estimates only.
(b) Ballpark estimates only. Assumes walking is 47% and cycling is 3% modal share by 2030.
(c) Ballpark estimates only. Assumes walking is 44% and cycling is 6% modal share by 2030.

We estimate the CWIS2 target is equivalent to a 70% increase in cycling stages relative to 2019, while the ATE strategic aim is roughly equivalent, depending on the split in walking/cycling mode share, to a less than doubling (70%) or more than trebling (230%) increase in cycling trips *in urban areas only*. With no government target for cycle trips outside urban areas it is assumed that the latter will not

[153] Department for Transport (2022) The Second Cycling and Walking Investment Strategy (CWIS2) 06/07/22.
[154] Department for Transport (2022). Framework Document: Active Travel England. 21/07/22.
[155] Based on the cycling trips per person in urban conurbations and cities and towns in 2018/19 from the National Travel Survey and estimated population living in towns and cities in 2019 based on the Rural/Urban Classification.
[156] Department for Transport (2020) Walking and Cycling Statistics, England: 2019. Table CW0403.

increase by the same amount which means the overall increase in cycling levels would be less than this. On the other hand urban cycling levels could increase faster than we have assumed and be a proportionately higher percentage of modal share by 2030.

It is difficult to compare these increases to those in Table 9 (which are for travel cycling in all areas) and the ATE targets are presumably based on different priorities (e.g. health or congestion) than carbon. Nevertheless, they suggest that large increases in cycling will be needed over the next few years.

Table D.2: Assumptions used to estimate cycle trips associated with ATE strategic targets

Assumption	Value	Source
Estimated population in urban towns and cities in England in 2019	37 million	Population in RUC categories 4,5,6 in 2011, prorated to 2019 based on 2019 population (a)
Estimated population in urban towns and cities in in England 2030	39 million	As above but prorated to 2030 based on forecast 2030 population (a)
No. walk trips per person in urban conurbations/urban cities and towns in 2019	254/279	National Travel Survey Table NTS9903
No. cycle trips per person in urban conurbations/urban cities and town in 2019	14/20	As above
Total cycle trips in urban areas in 2019 (million)	623	Cycle trips per person in urban conurbations and urban cities and towns multiplied by population in those areas in 2019
Total no. trips per person in urban conurbations/urban cities and town 2030	848/949	Assumed reduction of 10% in car driver/passenger trips per person from 2019 in line with carbon targets
Total no. active travel trips per person in urban conurbations/urban cities and towns 2030	424/475	50% of total trips (target)
No. cycle trips per person in urban conurbations/urban cities and town in 2030 (lower)	22/32	Assume increase in walk/cycle trips per person from 2019 in same proportion as increase in total active travel trips (b)
Total cycle trips in urban conurbations/urban cities and towns in 2030 (million) (lower)	456/584	2030 population * trips per person in 2030
No. cycle trips per person in urban conurbation/urban cities and towns in 2030 (upper)	43/65	Assume cycling increases at double the rate of walking
Total cycle trips in urban conurbations/urban cities and towns in 2030 (million) (upper)	912/1,167	2030 population * trips per person in 2030

(a) This does not take account of increasing urbanisation so may underestimate the population in towns and cities in these years

(b) This is a simplification, and in practice cycling may increase at a faster or slower rate than walking

Appendix E: Methodology and assumptions used to estimate future economic benefits

Table E.1: Inputs and assumptions used to estimate future economic benefits

Inputs to AMAT[157]	Assumptions
Appraisal year	2022
Intervention opening year	2022
Last year of funding	2030
Appraisal period	20
LA type	National average
No. daily trips without intervention (million)	3.8 (a)
No. daily trips with intervention (m) (lower bound)	7.8 (b)
No. daily trips with intervention (m) (upper bound)	12.5 (b)
How much of an average cycle trip will use intervention	50%
Current cycle infrastructure	on road non segregated
Proposed cycle infrastructure	off road segregated
Average length cycle trip (km)	7 (c)
Average speed cycling (km/h)	14
% otherwise use car	50% (d)
% otherwise use taxi	0%
Others	Default

(a) Estimated total figure for UK based on aggregated figures for the 4 nations in 2019
(b) Estimated total figure for UK in 2030 based on lower and upper estimates shown in Table 9
(c) Assumed average trip distance compared to 2019 increases due to e-bikes
(d) Conservative estimate based on the fact that in 2019 62% of non-bike trips in England were by car. Assume similar figures in Wales, Scotland and Northern Ireland.

Table E.2: AMAT categories and descriptions[158]

AMAT category	Our rewording in Table 11	DfT description
Congestion benefit	Reduced congestion	Traffic congestion improvements as a result of a reduction in vehicle kilometres
Infrastructure maintenance	Reduced road maintenance costs	Reduced wear and tear on the roads, and therefore reduced maintenance costs, due to fewer vehicles travelling on the road infrastructure.
Accident	Reduced collisions	Reduced road traffic accidents due to a reduction in car kilometres.
Local air quality	Reduced air pollutant emissions	Improvements in air quality from a reduction in car kilometres including changes in nitrous oxide (NOx) and particulate matter (PM).
Noise	Reduced noise	Improvements in noise pollution as a result of a reduction in car kilometres
Greenhouse gases	Reduced greenhouse gas emissions	A reduction in emissions of greenhouse gases due to a reduction in car kilometres

[157] Department for Transport (2022) Active Mode Appraisal Toolkit User Guide. May 2022.
[158] Ibid.

Reduced risk of premature death	Reduced premature death	Increased active travel delivers health benefits by reducing the risk of premature death.
Absenteeism	Less absenteeism due to illness	Increased physical activity of individuals improves their health and therefore reduces their number of 'sick days', resulting in increased economic activity.
Journey ambience	More attractive journey surroundings	Benefits to new and existing cyclists or walkers as a result of improvements to infrastructure can relate to a perception of improved safety and/or environmental conditions.