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Comparisons of cycle proportions for the journey to work from the 1981, 1991 and 2001 censuses

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Abstract

The 2001 census shows no significant difference in proportion of journeys to work made by bicycle in 2001 as compared with 1991, with the England, Wales and Scotland average for 2001 being 2.89%. This suggests an arrest in the decline in cycle use for the journey to work that took place during the 1980s.

District level comparisons show that 14 districts in the 2001 census have percentage point increases in cycling greater than 1% compared with the 1991 census and 7 of these are London boroughs. Notwithstanding London's special nature, a detailed comparative analysis of the fairly significant differences between London boroughs and any potential causes of these differences could indicate the presence of special factors that may be instructive in the further promotion of cycling for the journey to work.

Cambridge has the highest proportion of journeys to work by bicycle (28.34%, followed by Oxford (16.22%). Boundary changes have affected the rank order of some districts such as York (13.06%).

Policy

From the point of view of policy, cycling has relevance deriving from the National Cycling Strategy (DfT, 1996). Steven Norris, the then Minister for Local Transport, stated that "it is crystal clear that the bicycle has been underrated and underused in the UK for many years". Cycling was seen to have a role within a sustainable transport policy framework and it was asserted that cycling offers "practical alternatives to the private motor car". The target was to double the number of trips by cycle (on 1996 figures) by the end of 2002 and to quadruple the number of trips by cycle (on 1996 figures) by the end of 2012. Local authorities and other transport providers and trip generators were encouraged to set local targets which would contribute to this target. Convenience, safety, provision within the highway, cycle parking, cycle security, awareness raising, resources, best use of existing infrastructure and progress and monitoring were all considered relevant in assisting to deliver the overall target. As part of the awareness raising, the National Cycling Forum was established and has produced "issues" leaflets for retailers, public transport planners and providers.

The Ten Year Transport Plan for England (DfT, 2000) revised the National Cycling Strategy target for cycling in England by re-basing to 2000 and setting a target of tripling cycling by 2010. The National Cycling Strategy target remains extant for Scotland and Wales. The revision to the target is recognition that the original short-term target in the 1996 National Cycling Strategy was unlikely to be achieved.

At a local level, authorities are either implicitly following the national target, setting their own targets, or opting out of targeting an increase in cycle use. As an example Lancashire County Council (LCC, 2000) has set a revised target for cycling of doubling cycle usage from the 1996 base by 2006 and doubling again by 2016.

Evidence for changes in levels of cycle use allows for assessment to be made against targets. This paper summarises data on cycle use for the journey to work derived from the 1981, 1991 and 2001 censuses.

Statistical background

Before discussing the census data it is worth summarising data on cycle use from other sources to understand the context and limitations of the census data.

The Transport Statistics Bulletin for Quarter 1 in 2003 (DfT, 2003a) indicates that pedal cycles comprised 1% of road traffic in 2002. Table 1 indicates the index of estimated pedal cycle traffic since 1993.

Table 1 Pedal cycle traffic in Great Britain 1993 to 2002

	All motor vehicles	Pedal cycles
Estimated traffic in 1993 (billion vehicle kilometres)	412.2	4.0
1993	100.0	100.0
1994	102.2	100.2
1995	104.2	103.3
1996	107.0	101.7
1997	109.2	101.8
1998	111.5	98.7
1999	113.2	101.6
2000	113.2	103.7
2001	115.0	105.5
2002	117.9	110.0

It would appear that there has been an unprecedented rise in cycle traffic in the year from 2001 (4.2 bn. cycle kms.) to 2002 (4.4 bn. cycle kms.) with the Summer months (2002 Q2 index 108.9 and 2002 Q3 index 114.9) having the greatest volume of cycle traffic. Previous estimates of the volume of cycle traffic in earlier bulletins had shown a decrease from 4.5 billion vehicle kilometres (1993) to 4.0 billion vehicle kilometres (2001). The present bulletin does not fully explain the reversal of this trend, but it may be linked with increased detailed study of traffic counts on minor roads and the division of roads into 22 rather than 7 categories for analysis.

The National Travel Survey (DfT, 2002) shows a declining trend in use of the bicycle both in terms of the average distance travelled and the number of trips per person as shown in Table 2. Average trip length has risen by 47% over the period1975/76 to 1999/2001, perhaps because of decreasing use of the bicycle for very low distance journeys.

Table 2 National travel survey average trips and mileage by bicycle

	Average distance travelled (miles) per person per year	Average number of trips per person per year	Average trip length
1975/76	51	30	1.7
1985/86	44	25	1.8
1989/91	41	21	1.9
1992/94	38	18	2.0
1996/98	38	16	2.3
1999/2001	39	16	2.5

The latest bulletin on cycling statistics in England and Great Britain (2003b and 2003c) reports bicycle travel as the number of stages per person per year, where a trip consists of one or more stages and a new stage is defined when there is a change in the form of transport or when there is a change in vehicle requiring a separate ticket. Table 3 indicates a year by year breakdown of bicycle travel for England.

Table 3 Bicycle travel in England

	Average distance travelled (miles) per person per year	Bicycle stages per person per year	Average bicycle stage distance (miles)
1996	41	19	2.2
1997	43	19	2.2
1998	37	16	2.4
1999	45	18	2.5
2000	41	18	2.3
2001	38	15	2.5

Assuming a population of 58 million, it may be noted in passing that the National Travel Survey average distance travelled per person of 38 miles per year for 2001 would imply 3.5 bn cycle kilometres compared with the traffic bulletin estimate of 4.2 bn cycle kilometres for the same year. On the basis that some of the travel identified in the National Travel Survey may have been undertaken on non-highway routes, this discrepancy is perhaps all the more noteworthy.

It is also worth noting the consistent changes with time for groups of years in Table 2, but the less certain direction implied by the figures in Table 3. The additional year to year detail available from the expanded National Travel Survey is perhaps not too robust for minority activities such as cycling.

The bulletin also notes that in 1999/2001 46% of bicycle journeys for men and 35% for women were for work and business, indicating that the majority of cycling activity is for reasons other than the journey to work. It also notes that the Labour Force

Survey of Autumn 2001 indicated that 3% of those who travelled to work did so by bicycle.

Other relevant data at a national level includes Sustrans' monitoring of non-National Cycle Network routes and National Cycle Network routes that show a 2-3% and 13% rise respectively for the year 2001 to 2002 (Surveyor, 2003).

An analysis of census data from the years 1981, 1991 and 2001 is then against a backdrop of:

- apparently increasing cycle traffic in the decade to 2001;
- variation in cycle traffic being seasonal, with flows picking up in the second quarter of the year, i.e. from April at the time when the census is undertaken;
- a declining trend in the average number of trips per person per year by bicycle up until the 1980s, but then an apparent levelling off;
- cycle traffic for the journey to work comprising less than half of all cycle journeys by trip purpose; and
- a labour force survey in 2001 indicating a journey to work proportion for the bicycle of 3%.

Overall and Regional Comparisons

Table 4 summarises overall proportions of cycling for the journey to work by bicycle for England, Scotland and Wales and for Great Britain for the years 1981, 1991 and 2001. Note that the percentages are calculated based on the number of persons making a journey to work (and in the case of Scotland for those aged over 16 making a journey to study), that is to say that persons who work from home are deducted from the denominator in the calculation. The relevant census question asks for the mode of transport that forms the longest part of the journey to work by distance. Hence, as it is likely that a public transport leg of a journey is longer than a cycle leg, the census does not include as "cycle journeys to work" journeys where a stage of the journey is made by bicycle. The census asks for "usual" means of travel and so if one particular mode is generally used less frequently by respondents who have more than one regular mode the true aggregate proportion for that mode will not be reflected in the overall statistic of journey to work.

Table 4 Overall comparisons 1981, 1991 and 2001

	1981	1991	2001
England	4.11%	3.21%	3.11%
Wales	1.59%	1.41%	1.53%
Scotland	1.44%	1.36%	1.53%[1]
Great Britain	3.76%	2.97%	2.89%

Notes
1 Scottish figure calculated by removing those who work or study mainly from home, hence percentage differs slightly from that quoted in KS15 (ONS, 2003b).

The decline of 0.9% points in the percentage cycling to work in England in the decade to 1991 appears to have been arrested in the subsequent decade with only a 0.1% point decline evident. For Great Britain the 0.79% points decline to 1991 has more or less levelled off with a decline of only 0.08% points to 2001.

It should be noted that the base figure for persons travelling to work in England has risen consistently in each census year. In Wales however the number of journeys to work in the 2001 census was 1,070,933, compared with the 1991 figure of 1,087,400. It would appear then that within the 16,467 journeys that did not take place in 2001 compared with 1991 in Wales a disproportionate number were undertaken by modes other than the bicycle.

Table 5 shows comparisons across the three census years by government region for England. The source of the 1981 and the 1991 data is the Census Dissemination Unit website that allows for machine readable data to be downloaded and the data available is based on a cross-tabulation of travel to work and socio-economic group based on a 10% sample (CDU, 2003). The 2001 data comes from the Office of National Statistics (ONS, 2003a).

Table 5 English regional comparisons

		2001	1991 (10% sample)	1981 (10% sample)
North East	JTW	953,660	97,594	101,750
	Cycle JTW	16,786	1,527	2,026
	% cyclists	1.76%	1.56%	1.99%
North West	JTW	2,657,546	275,055	275,036
	Cycle JTW	65,961	7,263	8,714
	% cyclists	2.48%	2.64%	3.17%
Yorkshire and Humbs.	JTW	1,998,658	200,883	193,180
	Cycle JTW	63,384	6,936	7,686
	% cyclists	3.17%	3.45%	3.98%
East Midlands	JTW	1,744,420	174,710	158,375
	Cycle JTW	62,644	6,637	7,521
	% cyclists	3.59%	3.80%	4.75%
West Midlands	JTW	2,125,744	220,851	209,321
	Cycle JTW	52,545	5,529	7,117
	% cyclists	2.47%	2.50%	3.40%
East	JTW	2,335,893	231,997	202,668
	Cycle JTW	100,193	11,382	14,227
	% cyclists	4.29%	4.91%	7.02%
London	JTW	3,033,199	282,644	298,270
	Cycle JTW	77,330	5,783	7,308
	% cyclists	2.55%	2.05%	2.45%
South East	JTW	3,502,454	344,768	297,774
	Cycle JTW	119,315	12,674	15,587
	% cyclists	3.41%	3.68%	5.23%
South West	JTW	2,034,699	200,603	166,145
	Cycle JTW	76,430	7,470	8,015
	% cyclists	3.76%	3.72%	4.82%

Notes

1 JTW is journeys to work

As well as Scotland and Wales, it is the North East of England, London and to a small extent the South West of England that have assisted in contributing to the small

overall rise from 1991 to 2001 in cycle journeys to work. The large declines in the East of England (2.11% points) and South East of England (1.55% points) in the decade to 1991 have stabilised in both of these regions for the decade to 2001.

District comparisons

Some district boundary changes took place between 1981 and 1991, but there have been significant changes in the decade to 2001, principally as a result of the creation of many new unitary authorities in shire county areas and the disappearance of the counties of Humberside and Avon.

As counties are generally geographically non-homogenous, the analyst is immediately coaxed towards the greater detail offered by the data at the level of the 354 districts in England and the 22 unitary authorities in Wales. Table 6 shows the rank ordering of cycle use by district based on the 1981 census for the 26 English districts with cycle journey to work proportions greater than 0.1.

Table 6 Rank ordering of Districts with greater than 10% cycle mode share in 1981

2001 District Name and Code	2001 % cyclists	1991 % cyclists	1981 % cyclists
12UB Cambridge	28.34%	26.06%	27.61%
00FF York UA	13.06%	17.93%	20.98%
38UC Oxford	16.22%	16.26%	20.25%
32UB Boston	11.13%	14.31%	18.91%
42UH Waveney	9.27%	11.54%	16.60%
13UD Crewe and Nantwich	7.58%	11.05%	15.82%
12UD Fenland	7.44%	9.37%	15.36%
00FA Kingston upon Hull; City of UA	12.32%	12.69%	15.07%
24UF Gosport	11.44%	14.45%	14.70%
32UF South Holland	6.46%	8.86%	14.61%
00JA Peterborough UA	8.33%	10.76%	13.83%
36UF Ryedale	5.18%	9.11%	13.06%
33UG Norwich	9.37%	9.75%	12.98%
23UB Cheltenham	7.55%	8.74%	11.94%
00FC North East Lincolnshire UA	8.19%	8.54%	11.84%
40UC Sedgemoor	7.05%	7.95%	11.69%
33UF North Norfolk	5.57%	7.47%	11.33%
32UD Lincoln	7.59%	7.63%	10.87%
33UE King's Lynn and West Norfolk	6.07%	7.73%	10.81%
09UD Bedford	5.05%	6.07%	10.68%
36UH Selby	4.26%	6.53%	10.63%
00FD North Lincolnshire UA	6.08%	7.77%	10.57%
00MR Portsmouth UA	7.59%	8.69%	10.52%
45UC Arun	5.66%	6.72%	10.45%
40UE Taunton Deane	7.45%	8.25%	10.21%
42UD Ipswich	6.13%	7.35%	10.07%

So far as Wales is concerned Cardiff (2.89%) has the highest proportion cycling for the journey to work followed by Denbighshire (2.06%) and The Vale of Glamorgan

(2.05%). 14 other unitaries in Wales have proportions greater than 1%, with the remaining 5 having proportions less than 1%.

There is a consistent journey to work proportion by bicycle maintained in Cambridge, but perhaps, with the slight decline to 1991, there is evidence of a mirroring of the national trend of decline through the 1980s. York has significantly declined in mode share for the bicycle for journeys to work and this is related to the larger area that the City of York now covers as a unitary authority. In 1991 there were 4,377 journeys to work in the York City area, in 2001 there were 10,508 journeys to work in the York unitary authority area. The inner wards of the new unitary authority for York are unlikely to show declines in line with the overall decline suggested by the district data. These boundary issues are also relevant for North East Lincolnshire (Grimsby), and other districts besides. Oxford would appear to have stabilised after a 3.99% point reduction from 1981 to 1991.

Considering the data from the point of view of 2001, Table 7 shows districts with mode shares for the journey to work by bicycle greater than 6%.

Table 7 Rank ordering of Districts with greater than 6% cycle mode share in 2001

2001 District Name and Code	2001 % cyclists	1991 % cyclists	1981 % cyclists
12UB Cambridge	28.34%	26.06%	27.61%
38UC Oxford	16.22%	16.26%	20.25%
15UH Isles of Scilly	15.59%	15.04%	6.58%
00FF York UA	13.06%	17.93%	20.98%
00FA Kingston upon Hull; City of UA	12.32%	12.69%	15.07%
24UF Gosport	11.44%	14.45%	14.70%
32UB Boston	11.13%	14.31%	18.91%
33UG Norwich	9.37%	9.75%	12.98%
42UH Waveney	9.27%	11.54%	16.60%
00JA Peterborough UA	8.33%	10.76%	13.83%
00FC North East Lincolnshire UA	8.19%	8.54%	11.84%
12UG South Cambridgeshire	7.59%	7.19%	9.00%
00MR Portsmouth UA	7.59%	8.69%	10.52%
32UD Lincoln	7.59%	7.63%	10.87%
13UD Crewe and Nantwich	7.58%	11.05%	15.82%
23UB Cheltenham	7.55%	8.74%	11.94%
38UE Vale of White Horse	7.52%	8.32%	8.06%
40UE Taunton Deane	7.45%	8.25%	10.21%
12UD Fenland	7.44%	9.37%	15.36%
40UC Sedgemoor	7.05%	7.95%	11.69%
00AM Hackney	6.83%	4.03%	2.56%
23UE Gloucester	6.52%	7.12%	9.74%
32UF South Holland	6.46%	8.86%	14.61%
16UC Barrow-in-Furness	6.35%	9.11%	7.22%
32UE North Kesteven	6.17%	6.43%	7.56%
42UD Ipswich	6.13%	7.35%	10.07%
00FD North Lincolnshire UA	6.08%	7.77%	10.57%
33UE King's Lynn and West Norfolk	6.07%	7.73%	10.81%
42UG Suffolk Coastal	6.04%	6.47%	9.78%

It would appear that the favoured destination for cycle study tours should be the Isles of Scilly, but the percentage is calculated from a low base of journeys to work (975 in 2001, compared with the English district average of 58,000).

Table 8 lists districts that have demonstrated increases in cycling of 1% point or more in the decade to 2001.

Table 8 Rank ordering of Districts with greater than 1% point increase in cycle mode share from 1991 to 2001

2001 District Name and Code	2001 % cyclists	1991 % cyclists	1981 % cyclists	2001-1991
00AM Hackney	6.83%	4.03%	2.56%	2.81%
12UB Cambridge	28.34%	26.06%	27.61%	2.28%
00HB Bristol; City of UA	4.94%	3.30%	3.21%	1.64%
00AU Islington	5.15%	3.52%	2.59%	1.63%
00MC Reading UA	4.44%	2.83%	3.98%	1.61%
00AN Hammersmith and Fulham	5.21%	3.80%	3.89%	1.41%
00AY Lambeth	4.47%	3.06%	2.49%	1.41%
18UC Exeter	4.84%	3.44%	4.07%	1.40%
00AG Camden	4.10%	2.78%	2.52%	1.32%
39UD Oswestry	2.94%	1.75%	5.94%	1.19%
00ML Brighton and Hove UA	2.97%	1.82%	1.53%	1.15%
00BJ Wandsworth	4.22%	3.07%	3.12%	1.14%
00BE Southwark	3.98%	2.89%	2.21%	1.10%
00FY Nottingham UA	3.93%	2.93%	2.96%	1.00%

The nature of the districts demonstrating increases is somewhat disparate, including county towns, many London boroughs and some new unitary authorities. Noticeably absent are districts in metropolitan counties. It is worth noting that the absolute increase in the number of cycle journeys to work in Hackney from 1991 to 2001 is 2,670, for Cambridge it is 1,848 and for Nottingham it is 891.

Only 6 of the 14 districts showing the greatest increase in percentage points in the decade to 2001 had cycle usage at a level greater than the average (3.21% for England) in 1991. This could imply that other “special factors” are at work rather than that some districts are inherently better, or at least progressively better, places for cycling. The seven London boroughs with increases greater than 1% point are all inner London boroughs. Of the remaining 33 boroughs, only 7 show a decline in cycle use for the journey to work and the largest decline is -0.82% points (Hillingdon). A detailed comparative analysis of the fairly significant differences between London boroughs and any potential causes of these differences could be instructive.

Table 9 shows, not unexpectedly, that the vast majority of districts show little if any change in the proportion cycling to work in 2001 compared with 1991.

Table 9 Number of English Districts in different bands of percentage point change from 1991 to 2001

Percentage point change in proportion cycling for the journey to work 1991 to 2001	Number of English districts in range
-3.0% or less	5
-1.0% to -2.9%	35
-0.9 to +0.9%	300
1.0% or greater	14
Total	**354**

The five districts with a greater than 3.0% decline are York (4.87%), Ryedale in North Yorkshire (3.93%), Crewe and Nantwich in Cheshire (3.47%), Boston in Lincolnshire (3.18%) and Gosport in Hampshire (3.01%). All five districts demonstrated higher than average proportions of cycling for the journey to work in 1991 and appear in Table 6.

Concluding remarks

Census data shows no significant difference in proportion of journeys to work made by bicycle in 2001 as compared with 1991, with the England, Wales and Scotland average for 2001 being 2.89%. This suggests an arrest in the decline in cycle use for the journey to work that took place during the 1980s. The census data is consistent with the Autumn 2001 Labour Force Survey proportion of 3%.

14 districts in the 2001 census demonstrate percentage point increases in cycling greater than 1% compared with the 1991 census and 7 of these are London boroughs. Notwithstanding London's special nature, a detailed comparative analysis of the fairly significant differences between London boroughs and any potential causes of these differences could indicate the presence of special factors that may be instructive in the further promotion of cycling for the journey to work.

Journeys to work by bicycle form less than half of all journeys by bicycle and hence the census data is representative of changes in cycle use only for a minority of cycle journeys. A further compounding problem is that the census questionnaire asks for the "usual" mode of transport for the longest stage of the journey to work by distance. Changes in choice of access mode to the main mode of a journey to work are therefore not indicated in the census data.

While the census data shows a stable level of cycle use for the main mode journey to work for 2001 in comparison with 1991, the 1st quarter 2003 transport statistics bulletin demonstrates a 5.5% growth in pedal cycle kilometrage from 1993 to 2001. A significant growth in cycle use is also reported by Sustrans in connection with National Cycle Network Routes for the year 2001 to 2002, confirming a picture of increasing use towards the end of the decade to 2001. Contrasting with this is National Travel Survey data which shows a decline in both the average distance travelled per person by bicycle and the number of bicycle stages of a journey made per person per year in the period 1996 to 2001.

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