

Outcomes of the Cycling Demonstration Towns programme: monitoring project report

Individual town results: Brighton and Hove

April 2017

Report authors: Andy Cope, Research and Monitoring Unit, Sustrans
 Angela Kennedy, Research and Monitoring Unit, Sustrans
 Fiona Crawford, Research and Monitoring Unit, Sustrans
 Nick Cavill, Cavill Associates
 John Parkin, University of the West of England, Bristol
 Lynn Sloman, Transport for Quality of Life

PART A: INTRODUCTION
PART B: DATA COLLECTION AND ANALYTICAL METHODOLOGIES
PART C: OVERALL FINDINGS
PART D: INDIVIDUAL TOWN RESULTS
PART D1: AYLESBURY
PART D2: BRIGHTON AND HOVE
PART D3: DARLINGTON
PART D4: DERBY
PART D5: EXETER
PART D6: LANCASTER WITH MORECAMBE

About Sustrans

Sustrans is the charity making it easier for people to walk and cycle. We are engineers and educators, experts and advocates. We connect people and places, create liveable neighbourhoods, transform the school run and deliver a happier, healthier commute. Sustrans works in partnership, bringing people together to find the right solutions. We make the case for walking and cycling by using robust evidence and showing what can be done. We are grounded in communities and believe that grassroots support combined with political leadership drives real change, fast.

Join us on our journey. www.sustrans.org.uk

Head Office
Sustrans
2 Cathedral Square
College Green
Bristol
BS1 5DD

© Sustrans April 2017
Registered Charity No. 326550 (England and Wales) SC039263 (Scotland)
VAT Registration No. 416740656

Acknowledgments

The authors are grateful for the extensive assistance of officers in the six Cycling Demonstration Towns in supplying monitoring data for this research.

We are also grateful for additional support provided by Lisa Muller, Katie Pullen, George Macklon, Katie Thomson, James O'Hare, Richard Sanders, Alison Janes, Hannah Delaney, Laurence Bonner, Peter Stephenson, Charlotte Draycott and Jo Watson.

Disclaimer

Although this report was commissioned by the Department for Transport (DfT), the recommendations are those of the authors and do not necessarily represent the views of the DfT. While every effort has been made to ensure the information in this document is accurate, DfT does not guarantee the accuracy, completeness or usefulness of that information; and it cannot accept liability for any loss or damages of any kind resulting from reliance on the information or guidance this document contains.

Mapping (c) Crown Copyright licence no 100039241. Also OpenStreetMap (c) www.OpenStreetMap.org (and) contributors licence CC-BY-SA (www.creativecommons.org).

Table of contents

1	Introduction	4
1.1	Description of the Cycling City and Towns programme in Brighton and Hove	4
1.2	Expenditure	5
1.3	Summary of available monitoring data	5
1.4	Summary of headline findings	5
2	Analysis of automatic cycle counter data	6
2.1	Overall analysis	7
2.2	Sensitivity analysis	8
2.3	Analysis of data from individual counter sites	9
2.4	Relationship between programme activity and automatic count data	13
3	Analysis of manual count data	18
4	Combined manual and automatic count data	20
4.1	Brighton city centre cordon	20
5	Analysis of school related data	21
5.1	PLASC	21
5.2	Bike It	21
5.3	Analysis of counts of parked bicycles	24
6	Analysis of workplace travel data	25
7	Analysis of behaviour and attitude surveys	25
8	Analysis of casualty data	26
9	Analysis of physical activity data	27
9.1	Household level surveys of physical activity	27
9.2	Active People Survey	29
10	Maps	29

1 Introduction

1.1 Description of the Cycling City and Towns programme in Brighton and Hove

Brighton and Hove (referred to hereafter as 'Brighton') was amongst the six Cycling Demonstration Towns. The Brighton and Hove Cycling Town programme was focused on the western side of the town, where a programme of infrastructure development and smarter measures was delivered.

During the Cycling Demonstration Towns programme between 2005 and 2008, a total of 6.5km of route infrastructure was installed, including the widening and extension of National Route 2 of the National Cycle Network on the seafront and the installation of 1.5km fully segregated route running north south and linking to the seafront route. Advanced stop lines were implemented at 28 junctions over a short period of time at the beginning of the programme. Other infrastructure schemes focused on increasing city centre permeability, and installation of cycle parking. Personalised Travel Planning was a key component of the smarter measure programme, and a number of events to promote cycling were delivered through the 'Journey On' travel awareness branding. Bike It was delivered in 17 schools. Total spend during the Cycling Demonstration Towns programme was £2.9m, of which £1.2m was revenue expenditure and £1.7m, capital.¹

The Brighton and Hove Cycling Town project delivered between 2008 and 2011 built upon the preceding Cycling Demonstration Towns project. The project utilised a variety of infrastructure developments and smarter choice measures to encourage cycling.

Infrastructure developments focused on filling in missing links in the city's core cycle network on National Route 2 of the National Cycle Network (Brighton Pier to Brighton Marina) and National Route 20 of the National Cycle Network (the A23 arterial route to the city boundary). Other infrastructure improvements included the introduction and/or conversion of pedestrian-only crossings to toucan crossings and cycle improvements to signalised junctions (including advanced stop lines). Other improvements to the cycle network included upgrading of the trails and paths around the South Downs National Park to improve access. Cycle parking received particular prominence in the Cycling Town programme with the addition of 1,936 spaces.²

Smarter measures complemented the infrastructure improvements. Workplace engagement, at Brighton and Hove Council and 35 other organisations, targeted 20% of the total working population in the area. By the end of March 2011, 65,000 household in the western part of Brighton had been contacted through neighbourhood engagement programmes, principally Personalised Travel Planning. Other approaches using social media were used to target hard-to-reach individuals. Events such as Bike Week and Car Free Day further raised the profile of the programme. Bike availability in the area was increased through bike recycling with the YMCA (with 260 bikes made available for local people) and through the Bike

¹ Department for Transport (2009) 'Making a Cycling Town: a compilation of practitioners experiences from the Cycling Demonstration Towns programme. Qualitative survey 2005-2009'. Department for Transport.

² Brighton and Hove Cycling Town (2011) Brighton and Hove Cycling Town 2008-2011, Brighton and Hove Cycling Town. Available at <https://www.gov.uk/government/publications/cycling-england-cycling-city-and-towns-end-of-programme-reports> [Accessed 31 May 2012]

Library (with 30 children’s bikes available to loan). Schools were supported through a combination of Bikeability training, school travel plans and Bike It.

1.2 Expenditure

While this report is primarily concerned with the monitoring evidence around outcomes of the Cycling Demonstration Towns programme, it is useful to place these in context through summarising the programme inputs in terms of capital and revenue expenditure. Details of expenditure in Brighton and Hove during the Cycling Demonstration Town and Cycling City and towns programme are summarised in Table 1-1.

Table 1-1 Funds invested in cycling in Brighton and Hove

	2005-2008 revenue	2005-2008 Capital	2008-2011 revenue	2008-2011 capital
Total	£1,257,441	£1,664,439	£929,963	£2,385,537

1.3 Summary of available monitoring data

The following data sources are available:

- Data from 13 automatic cycle counters
- 12 hour manual counts performed quarterly at 12 locations since 2006
- Pupil Level Annual School Census (PLASC) travel data and monitoring data from Bike It
- workplace travel survey data (collected in 2010 only)
- behaviour and attitude surveys performed in 2006, 2008 and 2011
- counts of parked bicycles
- STATS19 cycling casualty data
- household survey of physical activity and campaign awareness
- Active People Survey (APS) data.

1.4 Summary of headline findings

Strong evidence of continued growth in levels of cycling over time from a relatively high initial baseline

The most complete data sets, time series data from automatic cycle counters located predominantly on traffic-free cycle routes, indicate that the growth in levels of cycling achieved during the Cycling Demonstration Towns period has continued into the second phase of the programme, although at a slower rate. There is some within-town variation in terms of the direction and magnitude of change over time. Manual count data indicates an overall increase in levels of cycling over time, although again growth is variable between individual locations. Analysis of manual and automatic counter data shows that the volume of cyclists crossing the city centre cordon on weekdays has increased. Notwithstanding the limitations of the data source, levels of cycling to primary and secondary schools have increased over time. However, proportions cycling to school peak in 2007/08 (primary schools) and 2008/09 (secondary schools) before declining, although to levels still greater than recorded in 2006/07. It is thus difficult to draw firm conclusions around the impact

of the programme on levels of cycling to school. Significant increases in proportions of pupils cycling to school everyday were recorded in schools engaged with Bike It.

- Automatic cycle counter data indicate an increase in volumes of cycles counted of between +19% and +21% against a 2006 baseline. Based on data from 13 automatic cycle counters, the estimated growth corresponds to an increase from 6,539 trips per day counted in 2006 to 7,795 in 2011
- An increase was observed at seven of the automatic cycle count sites and a decrease at five locations³
- Analysis of manual count data collected across 12 locations since 2006 indicates an annual average increase of +1%
- Across all schools, the percentage of children cycling to school as measured by PLASC was 1.5% in 2011 compared to 1.0% in 2006
- Bike It data indicate an increase in children cycling to school on the day of the survey from 4.9% in pre surveys to 11.2% in post surveys, and an increase in children to school everyday from 5.0% in pre surveys to 10.8% in post surveys
- Compared to pre-programme data, there was no significant change in the numbers of cycling casualties during compared to before the Cycling Demonstration Towns/Cycling City and Towns programme
- Workplace travel survey data collected in 2010 indicated an 11.4% modal share for cycling across 21 workplaces surveyed
- 44% of respondents to the behaviour and attitude survey in 2011 reported observing an improvement in the standard of on road cycle routes over the past three years and there was an increase of 44% in the number of respondents who felt safe cycling on roads in terms of exposure to traffic (from 16% to 23%).
- the household level survey of physical activity found that in 2006 24.7% of respondents cycled in a typical week. This increased to 26.4% in 2009 and was 26.1% in 2011.
- APS data indicate a significant decrease in Brighton and Hove in the proportion of respondents cycling once or more per month over the programme period (2005/6 to 2010/11), although an increase was observed in the surveys performed between these points. A decrease in the proportion cycling 12 or more times per month was observed between 2005/6 and 2010/11

2 Analysis of automatic cycle counter data

Data are available from a total of 13 counters in Brighton and Hove. The continuity and duration of the time series is variable across these locations. In the following sections information regarding the location, volumes of cyclists recorded and change in volumes of cyclists recorded over time are presented for each location. The cycle counters are located across Brighton and Hove, providing coverage along the seafront and a number of the key access routes into the city centre. Of the 13 sites, nine were installed in 2006, one in 2008 and three in 2010. As data were not available for 2005, data from 2006 onwards are included in the analysis.

Two distinct sets of analysis have been undertaken using cycle counter data in Brighton and Hove. In the first, all available data were analysed using a regression model to allow an estimate of change in cycle trips recorded over the programme

³ Insufficient data were available for the thirteenth count site to enable an estimate of change over time to be calculated

period against a baseline. In the second set of analysis, data from individual sites were analysed in order to determine the average volumes of cyclists recorded, distribution of cycle trips over the course of the day and (where sufficient data are available) the annual percentage change in the count of cyclists.

2.1 Overall analysis

In 2009, following the Cycling Demonstration Towns phase, an increase in counts of cyclists of +27% was reported, relative to a 2006 baseline and including data to the end of March 2009 (Table 2-1).

Table 2-1 Change in cycle count in Brighton and Hove at the end of the Cycling Demonstration Towns period relative to a 2006 baseline (baseline = 100%)

	2006	2007	2008	2009
Change against 2006 baseline	100%	108%*	117%*	127%*

* indicates a significant difference ($p < 0.05$) compared to the 2006 baseline

Table 2-2 presents the percentage change in cycle counts relative to a 2006 baseline including data from all counters to the end of September 2011.

Table 2-2 Change in cycle count in Brighton and Hove at the end of the Cycling City and Towns period relative to a 2006 baseline (baseline = 100%)

	2006	2007	2008	2009	2010	2011
Change against 2006 baseline	100%	106%*	115%*	122%*	107%*	119%*

* indicates a significant difference ($p < 0.05$) compared to the 2006 baseline

The difference between the uplift to 2009 reported at the end of the Cycling Demonstration Towns period (Table 2-1) and the equivalent figure reported using data to the end of the Cycling City and Towns period (Table 2-2) is due to two factors. Firstly, the Cycling Demonstration Towns analysis included data up to March 2009 only. The inclusion of data to the end of 2009 in the analysis reported in Table 2-2 impacts upon the percentage change in 2009. Secondly, the original analysis included four counters which, due to their distance from the centre of Brighton, were considered by the project team to be peripheral to the programme. Data collection ceased at all four sites in early 2010. These counters are excluded from the current analysis.

Table 2-2 indicates a drop off in levels of cycling in 2010 compared to 2009, followed by an apparent recovery in 2011, potentially a result of poor weather during late 2009 and early and late 2010. An additional element was added into the regression model to account for the periods of severe weather. Table 2-3 presents the findings of this analysis.

Table 2-3 Change in cycle count in Brighton at the end of the Cycling City and Towns period relative to 2006 baseline including an adjustment for snow (baseline = 100%)

	2006	2007	2008	2009	2010	2011
Change against 2006 baseline	100%	106%*	115%*	122%*	115%*	119%*

* indicates a significant difference ($p < 0.05$) compared to the 2006 baseline

Including a factor in the model to adjust for poor weather results in there being a less marked drop in cycling in 2010. However change against the baseline year is still less than that estimated for 2009, followed by an uplift in 2011.

The analysis reported in Table 2-4 is for the Cycling City and Towns programme, comparing cycling levels in 2011 to a 2007 baseline in order to focus on changes occurring during the most recent phase of the programme.

Table 2-4 Change in cycle count in Brighton at the end of the Cycling City and Towns period relative to a 2007 baseline (baseline = 100%)

	2007	2008	2009	2010	2011
Change against 2007 baseline	100%	109%*	115%*	101%	112%*

* indicates a significant difference ($p < 0.05$) compared to the 2007 baseline

The collective analysis of counter data in Brighton across the whole project period suggests a concentration of growth over the first phase of the programme, with slower growth over the second phase. While it is not possible to firmly attribute the apparent levelling off in cycle activity to any particular cause, it is interesting to note that there is anecdotal evidence that Cycling England felt there was a loss of momentum in the CCT programme following a change of political leadership at this time (Darnton 2012, personal communication).

2.2 Sensitivity analysis

As noted above, the initial collective analysis of cycling count data in Brighton excluded four counters that had been included in the Cycling Demonstration Towns analysis but have been excluded from the present analysis based on their location. In order to examine the impact of including these count sites, a secondary analysis was performed including data from these locations, in addition to the 13 counters considered above. The results of this analysis, presented in Table 2-5, indicate a slightly greater change against the baseline for all years when compared to analysis performed using the 13 count sites only (Table 2-2).

Table 2-5 Change in cycle count in Brighton and Hove at the end of the Cycling City and Towns period relative to a 2006 baseline (including four peripheral counters, baseline = 100%)

	2006	2007	2008	2009	2010	2011
Change against 2006 baseline	100%	108%*	116%*	123%*	109%*	121%*

* indicates a significant difference ($p < 0.05$) compared to the 2006 baseline

Concerns were raised by the project team concerning the reliability of data collected at the Dyke Road Avenue count site (Table 2-8, map reference 4). In order to investigate the impact of data from this individual counter, the overall analysis was repeated excluding this count site. The results of this analysis are presented in Table 2-6.

Table 2-6 Change in cycle count in Brighton and Hove at the end of the Cycling City and Towns period relative to a 2006 baseline (excluding the Dyke Road Avenue counter, baseline = 100%)

	2006	2007	2008	2009	2010	2011
Change against 2006 baseline	100%	106%*	115%*	122%*	110%*	121%*

* indicates a significant difference ($p < 0.05$) compared to the 2006 baseline

2.3 Analysis of data from individual counter sites

Data from individual cycle counters were analysed in order to determine the rate of change in volumes of counts recorded at each location over time. The results of this analysis are summarised in Table 2-7 and alongside more detailed information for each counter in Table 2-8. Sufficient data are available to robustly estimate the annual percentage change in the number of cyclists counted for ten of the 13 automatic cycle counters included in the analysis. Of the remaining three count sites, based on the more limited data available, change over time is positive for one and negative for one count site. The third site has less than one year of complete data hence it is not possible to make an estimate of change over time.

Table 2-7 Summary of findings of detailed analysis of data from individual count sites

	All counters
Number of counters for which data are available	13 ^a
Number of counters for which sufficient data are available to quantify change over time ⁴	10
Number of counters with quantifiable increase	6
Number of counters with no change	0
Number of counters with quantifiable decrease	4

^a excluding four peripheral counters omitted from the overall analysis following cessation of data collection in 2010

In the following table counters are ordered by their location from west to east across Brighton and Hove. Map references refer to the accompanying map.

⁴ None of the changes were statistically significant.

Table 2-8 Description of automatic cycle counters in Brighton and Hove

Map reference	Location	Time period	Annual change ^a	Average daily count in 2010 ^b	Comments
1.	Aldrington Halt Footway south of Subway	2006-2011	Weekday: -4% Sat/Sun: -3%	Overall: 176 Weekdays: 190 Weekend days: 141	Located on a traffic-free route close to Aldrington railway station, approximately two and a quarter miles west of the centre of Brighton.
2.	NCN2/A259 Kingsway	2006-2011	Weekday: +7% Sat/Sun: +5%	Overall: 744 Weekdays: 761 Weekend days: 704	Located on a traffic-free section of National Route 2 of the National Cycle Network on the seafront, two miles west of the centre of Brighton.
3.	B2066 New Church Road	2006-2011	Weekday: +2% Sat/Sun: +1%	Overall: 463 Weekdays: 527 Weekend days: 298	Located on an on-road section of Regional Route 62 of the National Cycle Network. Two miles west of the centre of Brighton, a supermarket, museum and art gallery are nearby.
4.	C56 Dyke road Avenue	2006-2011	Weekday: -4% Sat/Sun: -1%	Overall: 82 Weekdays: 89 Weekend days: 43	Located on an on-road section of route in the Westdene area, three miles north-west of the centre of Brighton.
5.	Grand Avenue	2008-2011	Weekday: +11% Sat/Sun: -4%	Overall: 270 Weekdays: 295 Weekend days: 212	Located on an on-road route that links to the seafront, approximately one and a half miles west of the centre of Brighton.
6.	The Drive	2010-2011	- ^b	Overall: 390 Weekdays: 416 Weekend days: 328	Located on an on-road route that links to the seafront, approximately one and a half miles west of the centre of Brighton.
7.	NCN2, Kings Road	2006-2011	Weekday: +11% Sat/Sun: +9%	Overall: 1,620 Weekdays: 1,719 Weekend days: 1,298	Located on a traffic-free section of National Route 2 of the National Cycle Network, on the seafront adjacent to Kings Road, half a mile west of the centre of Brighton.
8	Kings Road	2010-2011	Positive	Overall: 1,765 Weekdays: 1,797 Weekend days: 1,637	Located on a traffic-free section of National Route 2 of the National Cycle Network on the seafront, a quarter of mile west of the centre of Brighton.
9.	NCN20 / A23 Preston Road	2006-2011	Weekday: +6% Sat/Sun: +4%	Overall: 769 Weekdays: 888 Weekend days: 495	Located on a traffic-free route adjacent to Preston Road, one mile north-west of the centre of Brighton. A train station is located nearby.

10.	NCN90 / A2073 St Peter's Church	2006-2011	Weekday: +1% Sat/Sun: 0%	Overall: 1,262 Weekdays: 1,420 Weekend days: 920	Located on a road-adjacent route to the west of the city, in a location parallel to count site 4 on the seafront, half a mile north of the centre of Brighton.
11.	A259 Marine Parade, NCN2 option	2006-2011	Weekday: -7% Sat/Sun: -10%	Overall: 268 Weekdays: 314 Weekend days: 199	Located on a short traffic-free section of route between two on-road sections of National Route 20 of the National Cycle Network, a quarter of mile east of the centre of Brighton.
12.	Madeira Drive	2010-2011	Negative	Overall: 766 Weekdays: 755 Weekend days: 878	Located on a traffic-free section of National Route 2 of the National Cycle Network, a quarter of a mile east of the centre of Brighton.
13.	NCN90 / A270 Lewes Road by Mithras House	2006-2011	Weekday: -6% Sat/Sun: -8%	Overall: 537 Weekdays: 807 Weekend days: 292	Located outside the University of Brighton on a traffic-free section of route, one and a half miles north-east of the centre of Brighton.

^afor counters with less than 36 months of data only a tentative indication as to the direction of the change can be reported

^binsufficient data are available for this site to enable any estimate of change over time to be made

2.4 Relationship between programme activity and automatic count data

2.4.1 Movement along the seafront (National Route 2 of the National Cycle Network)

The seafront cycle route is an important route in Brighton, both for commuters and leisure cyclists. One element of the Cycling City and Towns programme delivered in Brighton was to complete missing links within the cycle network such as the section of the National Route 2 of the National Cycle Network between Brighton Pier and Brighton Marina. The route also benefited from resurfacing of the section alongside Hove Street, junction improvements on access routes, and comprehensive signage. Five automatic cycle counters have been identified as monitoring this route (Map 2-1):

- NCN2 / 1258 Kings Road (map reference 7)
- NCN2 / A259 Kingsway (map reference 2)
- A259 Marine Parade NCN2 option (map reference 11)
- Kings Road (map reference 8)
- Madeira Drive (map reference 12)

Map 2-1 Location of automatic cycle counters monitoring National Route 2 of the National Cycle Network in Brighton (site numbers refer to Table 2-8)



Table 2-9 presents the median daily count of cyclists recorded in 2010, and the average annual change at each site based on the data available (for weekdays and weekend days).

Table 2-9 Average annual percentage change in counts recorded at locations on National Route 2 of the National Cycle Network in Brighton

Counter	Median daily count of cyclists (2010)		Average annual % change in daily count ^a	
	Weekdays	Weekend days	Weekdays	Weekend days
NCN2 / 1258 Kings Road	1,719	1,298	+11%	+9%
NCN2 / A259 Kingsway	761	704	+7%	+5%
A259 Marine Parade NCN2 option	314	199	-7%	-10%
Kings Road	1,765	1,797	Positive	positive
Madeira Drive	755	878	Negative	negative

^a for counters with less than 36 months of data only a tentative indication as to the direction of the change can be reported

Substantial volumes of cyclists are recorded particularly on the central sections of the route on Kings Road and Kingsway, both on weekdays and weekend days. The annual average percentage change at these sites is positive, whilst volumes of cyclists recorded at two easterly count sites decline over time. The Marine Parade and Madeira Drive counters are situated to the east of Brighton Pier and therefore may have been impacted by the infrastructure works in this area which were completed in early 2009.

Analysing data collectively from the five count sites on National Route 2 of the National Cycle Network indicates a +36% increase against a 2006 baseline, compared to +19% for all counters across Brighton. Year to year change for this group of counters is presented in Table 2-10.

Table 2-10 Change in cycle count recorded on National Route 2 of the National Cycle Network at the end of the Cycling City and Towns period relative to a 2006 baseline (baseline = 100%)

	2006	2007	2008	2009	2010	2011
Change against 2006 baseline	100%	105%*	119%*	129%*	118%*	136%*

* indicates a significant difference (p<0.05) compared to the 2006 baseline

The hourly distribution of counts for all locations show peaks at commuting times, with the afternoon peak in counts beginning from 4pm. Comparing hourly distributions between 2007 and 2011 indicates growth at all times of the day on both weekdays and weekend days for the counters on Kings Road and Kingsway. Median hourly counts of cyclists recorded on Kings Road are presented in Chart 2-1 and 2-2 below by means of example.

Chart 2-1 Median count per hour on weekdays in 2007 and 2011 – NCN2 / 1258 Kings Road

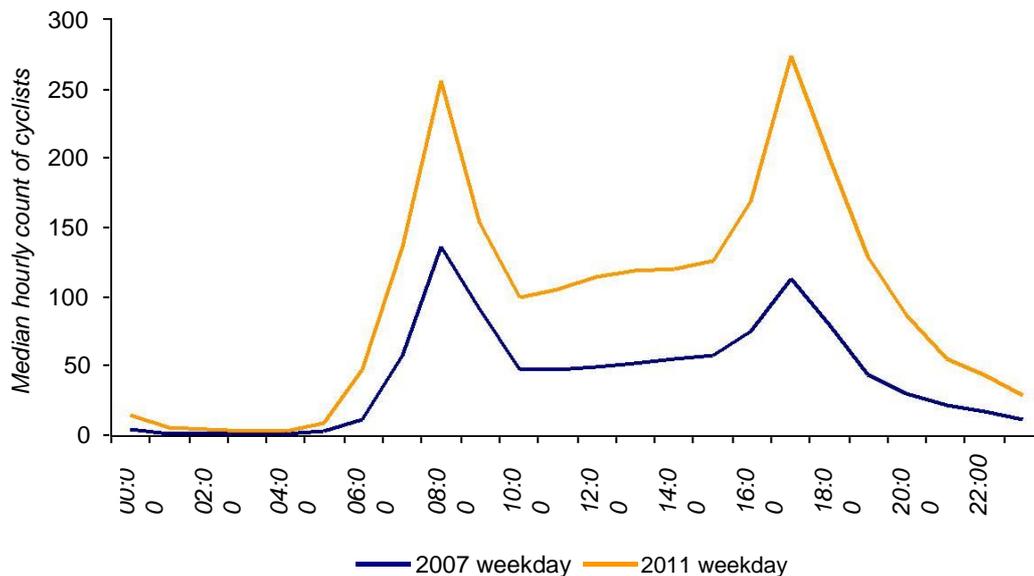
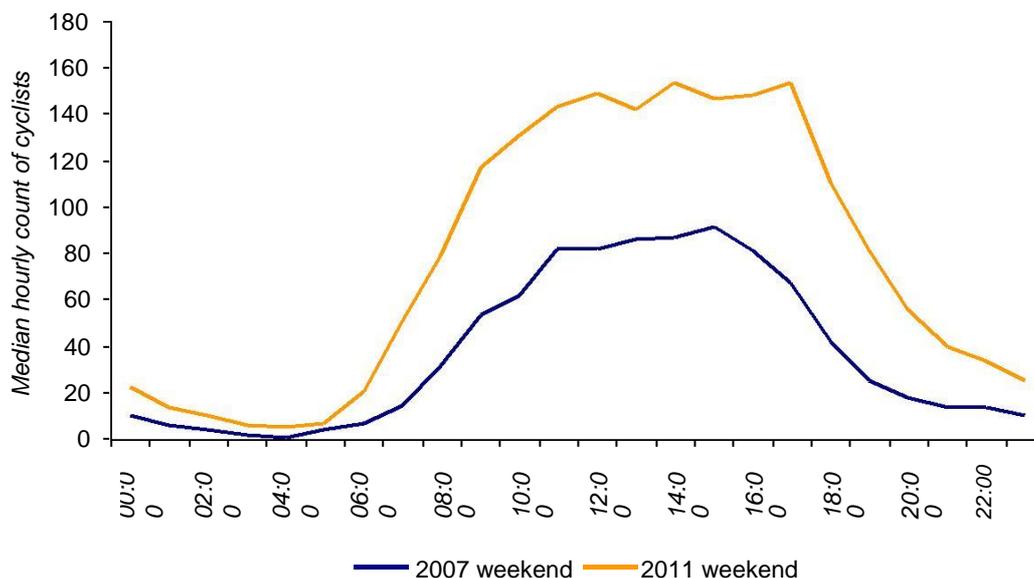


Chart 2-2 Median count per hour on weekend days in 2007 and 2011 – NCN2 / 1258 Kings Road



2.4.2 Grand Avenue/The Drive

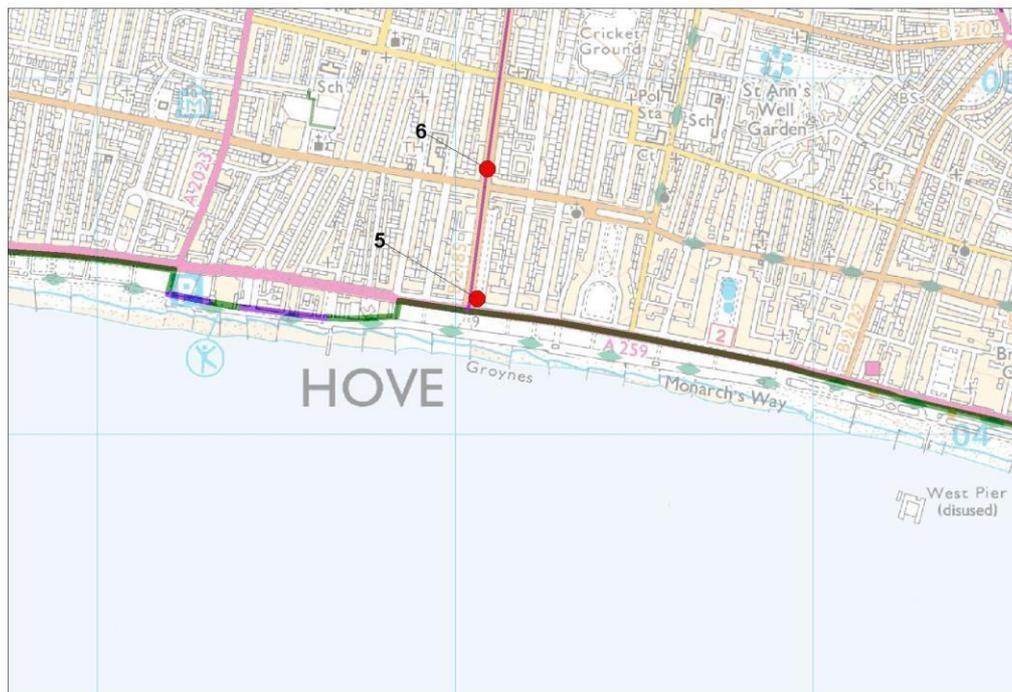
A high quality ‘cycle freeway’ along Grand Avenue and The Drive was completed in June 2008, near the end of the Cycling Demonstration Towns programme. It has received continued investment during the Cycling City and Towns phase of the programme. Junction improvements have been implemented at Church Road/Grand Avenue and improved facilities for making right turns off Grand Avenue have also

been completed. Grand Avenue and The Drive have also been comprehensively signed with times and distances.

There are two automatic cycle counters which monitor cycle volumes in this area:

- NCN82/B2185 Grand Avenue (map reference 5)
- The Drive (map reference 6)

Map 2-2 Location of automatic cycle counters on Grand Avenue and The Drive (site numbers refer to Table 2-8)



Less than one year of data is available for the counter on The Drive and therefore estimates of change over time cannot be made. The counter on Grand Avenue, however, was installed in 2008, following construction of the cycle freeway. The median daily count of cyclists recorded at this location is summarised in Chart 2-3, indicating a general growth in volumes of cyclists using this route, particularly in the summer months.

The hourly distribution of counts on Grand Avenue shows peaks at commuting times, with the afternoon peak in counts beginning from 3pm. Comparing hourly distributions between 2008 and 2011 indicates growth at all times of the day (Chart 2-4), particularly during the evening commuting times.

Chart 2-3 Median daily count of cyclists recorded on Grand Avenue

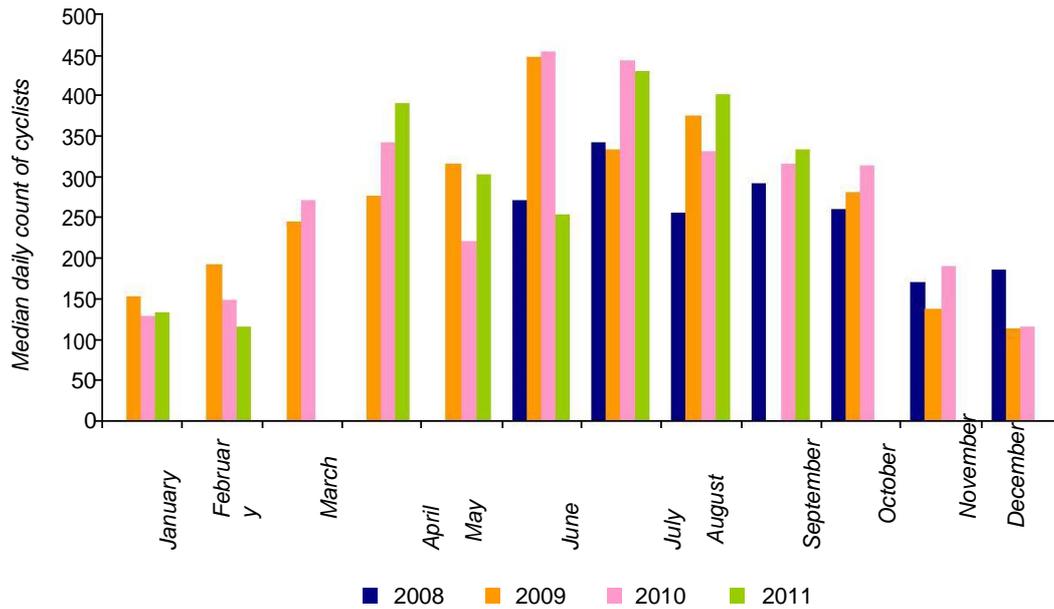
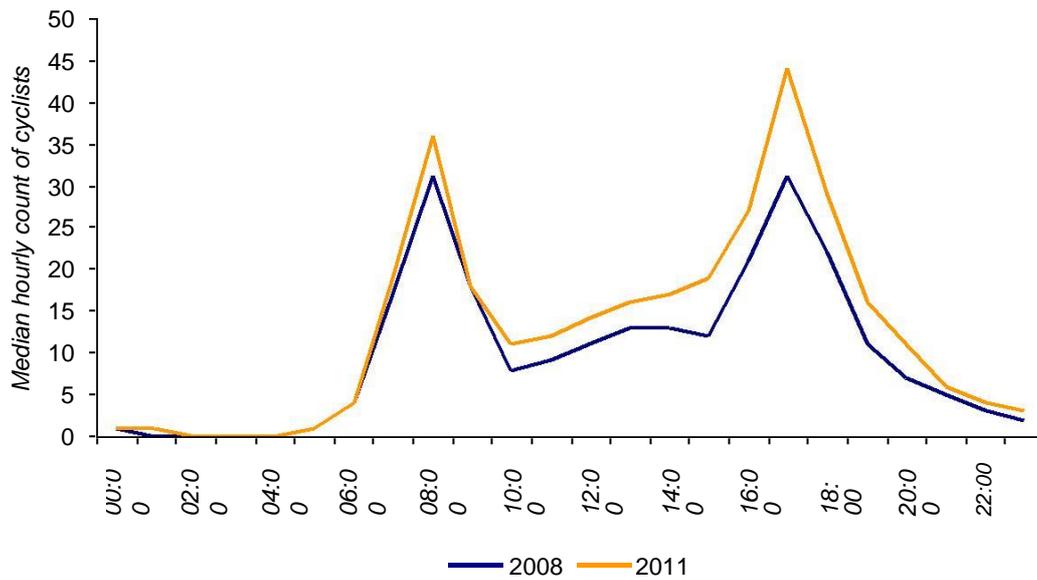


Chart 2-4 Median count per hour on weekdays in 2008 and 2011 – Grand Avenue



3 Analysis of manual count data

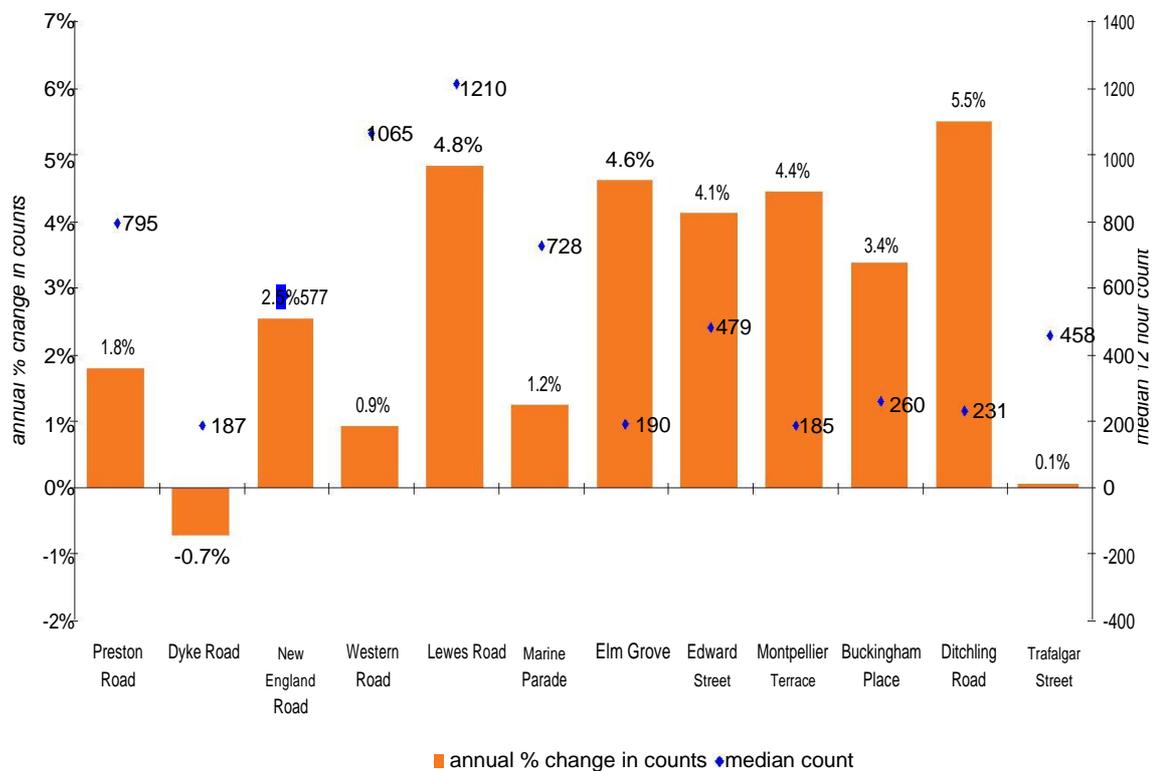
Quarterly 12 hour manual counts have been undertaken at twelve locations since quarter 3 of 2006. No counts were undertaken in quarter 2 of 2007. The sites form a cordon around Brighton city centre and their locations, indicated in the accompanying map (section 10), are as follows:

- Montpellier Terrace (map reference A)
- Western Road (map reference B)
- Dyke Road (map reference C)
- Buckingham Place (map reference D)
- Preston Road (map reference E)
- New England Road (map reference F)
- Trafalgar Street (map reference G)
- Ditchling Road (map reference H)
- Marine Parade (map reference I)
- Edward Street (map reference J)
- Elm Grove (map reference K)
- Lewes Road (map reference L)

Chart 3-1 below shows the annual percentage change in counts across the period for each of the count sites. Combining the counts from all twelve locations gives an annual percentage change in counts of +1% over the same period for Brighton and Hove⁵.

⁵ When comparing the total count at each point in time with counts in the same quarter but different years, there are 36 possible comparisons in Brighton and Hove, 31 of which are significant differences (18 increases and 13 decreases).

Chart 3-1 Annual average percentage change in 12 hour manual counts of cyclists performed at twelve locations around Brighton city centre

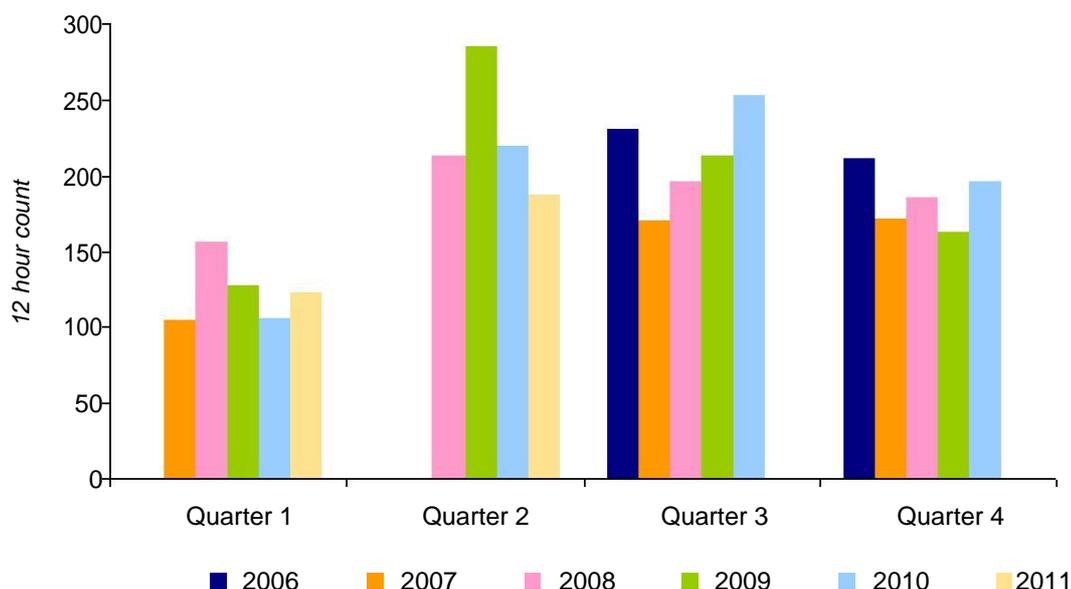


The sites which have seen the greatest increases in cyclists are located in different parts of the city: Lewes Road and Ditchling Road to the North, Elm Grove and Edward Street to the East and Montpellier Terrace to the West. Lewes Road, a site where some of the highest volumes of cyclists are recorded, exhibits the second highest increase in counts amongst the group of sites.

Montpellier Terrace has seen a much greater increase in cyclists than Western Road which is parallel to it and is used by greater volumes of cyclists. Both of these roads saw the installation of advanced stop lines which may have encouraged cycling on these routes.

Dyke Road is the only site which has seen a decrease in counts over the period analysed. Chart 3-2 shows all of the counts undertaken at this site and indicates a consistent increase in quarter 3 counts from 2007 onwards, but inconsistent year to year change in other quarters.

Chart 3-2 : Volumes of cyclists recorded during manual quarterly counts at Dyke Road between 2006 and 2011



4 Combined manual and automatic count data

4.1 Brighton city centre cordon

Infrastructure work, including completing links and junction improvements, as well as smarter measures, including workplace engagement, were implemented in the centre of Brighton during the Cycling City and Towns programme. The cordon around the centre of the city includes the twelve manual count sites described above as well as the following automatic cycle counters:

- NCN20 / A23 Preston Road (map reference 9)
- NCN90 / A2073 St Peter's Church (map reference 10)
- NCN2 / 1258 Kings Road (map reference 7)
- A259 Marine Parade NCN2 option (map reference 11)

The counter located on Madeira Drive, whilst part of the cordon, was not included in this analysis as such a short period of data was available for this location. Manual count data were combined with the automatic counter data for the times corresponding to the manual counts. Gaps in the data from automatic cycle counters included in the cordon limit the comparisons that can be made between counts performed over time. In order to combine as many time points within the comparison whilst maximising the period time between the two counts being compared, data collected in quarter 3 2007, quarter 4 2008 and quarter 2 2009 were combined and compared to data collected in quarter 3 2010, quarter 4 2010 and quarter 2 2011. This analysis indicates a significant increase in counts ($p < 0.05$), from a total of 33,909 cyclists to 36,010 cyclists between the two periods compared⁶.

⁶ Counts are the total recorded across all manual and automatic count sites on the cordon on the three 12-hour count periods combined together for each of the two groups of quarters being compared

5 Analysis of school related data

Brighton and Hove implemented a number of initiatives in order to engage young people in the programme. These included delivering Bikeability training and School Travel Planning. Bike It has been delivered in 27 schools since 2008, and 13 Bike Clubs have been set up in the area.

5.1 PLASC

The percentage of pupils in Brighton reporting cycling to be their usual mode of travel to school are summarised in Table 5-1. The proportion of pupils usually cycling to school increased from 1.0% to 1.5% between 2006/07 and 2010/11 (this was found to be statistically significant). However, although levels of cycling to both primary and secondary schools were greater in 2010/11 than in 2006/07, the percentage cycling peaked in 2007/08 for primary and 2008/09 for secondary schools before declining to 2010/11.

Table 5-1 Percentage of pupils surveyed reporting cycling to be their usual mode of travel to school

	Academic year				
	2006/07	2007/08	2008/09	2009/10	2010/11
Primary	0.9%	1.7%	1.6%	1.4%	1.5%*
Secondary	1.1%	1.9%	2.0%	1.7%	1.5%
All schools	1.0%	1.8%	1.7%	1.5%	1.5%*

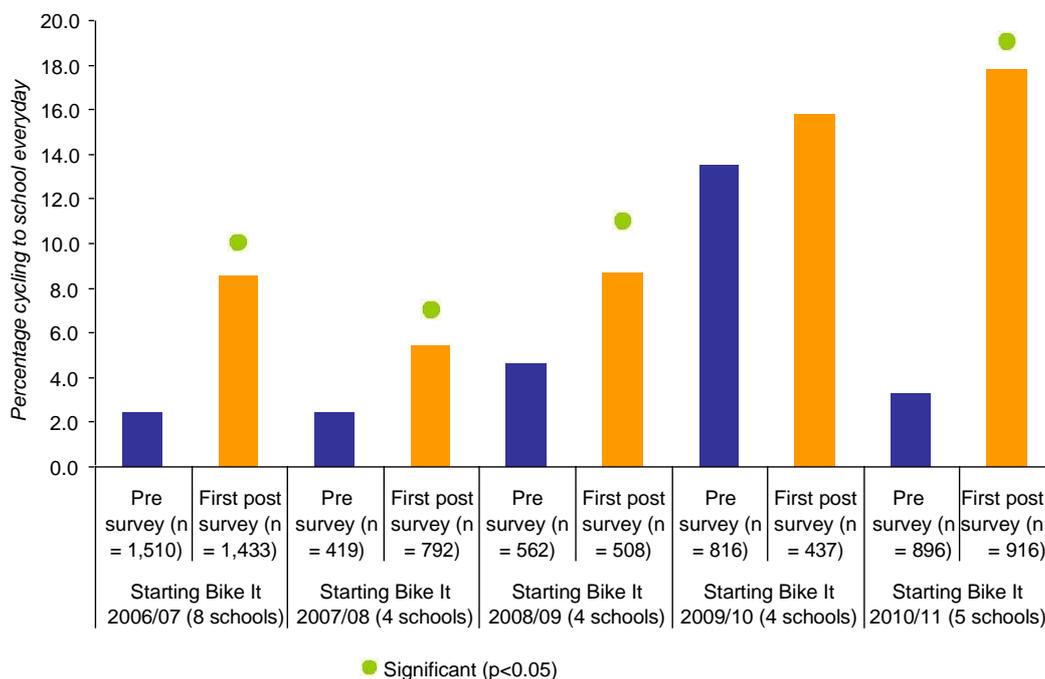
^a These figures are based on data from 56 primary schools and seven secondary schools

* indicates a significant change in cycling in the 2010/2011 academic year compared to the 2006/07 academic year ($p < 0.05$)

5.2 Bike It

Bike It has been delivered in 27 schools in Brighton and Hove since September 2008. Data are available in the standard format (i.e. pre survey followed by a post intervention survey at the end of the first academic year of engagement) for 25 schools. Aggregated percentages of children cycling everyday for schools starting Bike It in each academic year during the programme are presented in Chart 5-1. The change in the proportion of children reporting to cycle to school everyday between the pre and post survey is significant for schools starting Bike It in the 2006/07, 2007/08, 2008/09 and 2010/11 academic years.

Chart 5-1 Proportion of children cycling to school everyday in the pre engagement Bike It survey and the first post-engagement survey



Aggregating together data from all pre intervention and first post intervention surveys performed during the project, the percentage of children surveyed cycling to school everyday increased from 5.0% to 10.8%⁷, whilst the proportion of children cycling to school regularly (everyday and once or twice a week) increased from 15.4% to 30.9%⁸. The proportion 'never' cycling to school decreased from 70.3% to 48.8%⁹. The proportion of children cycling to school on the day of the survey increased from 4.9% to 11.2%¹⁰.

For 17 schools in Brighton, data are available from hands up surveys performed at the end of the second academic year after initial engagement. The proportion cycling to school everyday, regularly and never are presented in Table 5-2. These data suggest that levels of cycling in schools engaged with Bike It are sustained into the years following initial engagement. However, it should be noted that schools may continue to have the support of Bike It officers beyond the first year of Bike It delivery, with some engagement 'at distance'.

⁷ Significant increase (p < 0.05)

⁸ Significant increase (p < 0.05)

⁹ Significant decrease (p < 0.05)

¹⁰ Significant increase (p < 0.05)

Table 5-2 Proportion of children cycling to school everyday, regularly and never before Bike It and at the end of the first and second academic years of engagement

% Cycling to school	Pre survey ^a	First post survey ^b	Second post survey ^c
Everyday	5.8%	9.6%*	7.9%*
Regularly	17.2%	29.2%*	27.4%*
Never	68.2%	49.2%*	48.3%*

^a pre-Bike It survey (in September of the first academic year of engagement)

^b first Bike It survey performed at the end of the first academic year of engagement

^c second Bike It survey performed at the end of the second academic year of engagement

* results are significantly different to the pre-intervention survey results (p<0.05)

Table 5-3 presents levels of cycling to school as recorded by PLASC in schools where Bike It was delivered between 2006 and 2011. In the table below non-Bike It schools are those not engaged in Bike It at any point between 2006 and 2011.

Table 5-3 Comparison of PLASC data from non-Bike It schools and Bike It schools grouped by year of first engagement in Brighton and Hove

	2007	2008	2009	2010	2011
Non-Bike It schools ^a	0.9%	1.2%	1.1%	1.2%	1.1%
Bike It in 2006 ^{b,g}	2.0%	5.1%	4.0%	2.5%	3.1%
Bike It in 2007 ^{c,g}	2.3%	5.1%	4.8%	3.2%	2.3%
Bike It in 2008 ^{d,g}	0.8%	3.1%	4.4%	3.5%	3.5%
Bike It in 2009 ^{e,g}	0.4%	0.4%	0.4%	0.8%	0.5%
Bike It in 2010 ^{f,g}	0.0%	0.0%	0.0%	0.0%	2.2%

^a Data for 36 primary schools and six secondary schools that were not engaged in Bike It

^b Data for one primary school initially engaged in Bike It in 2006

^c Data for nine primary schools initially engaged in Bike It in 2007

^d Data for two primary schools and one secondary school initially engaged in Bike It in 2008

^e Data for two primary schools initially engaged in Bike It in 2009

^f Data for five primary schools initially engaged in Bike It in 2010

^g PLASC data are collected in January. Bike It engages with schools from the beginning of the academic year. For schools starting Bike It in, for example, 2008, the relevant PLASC year is 2009

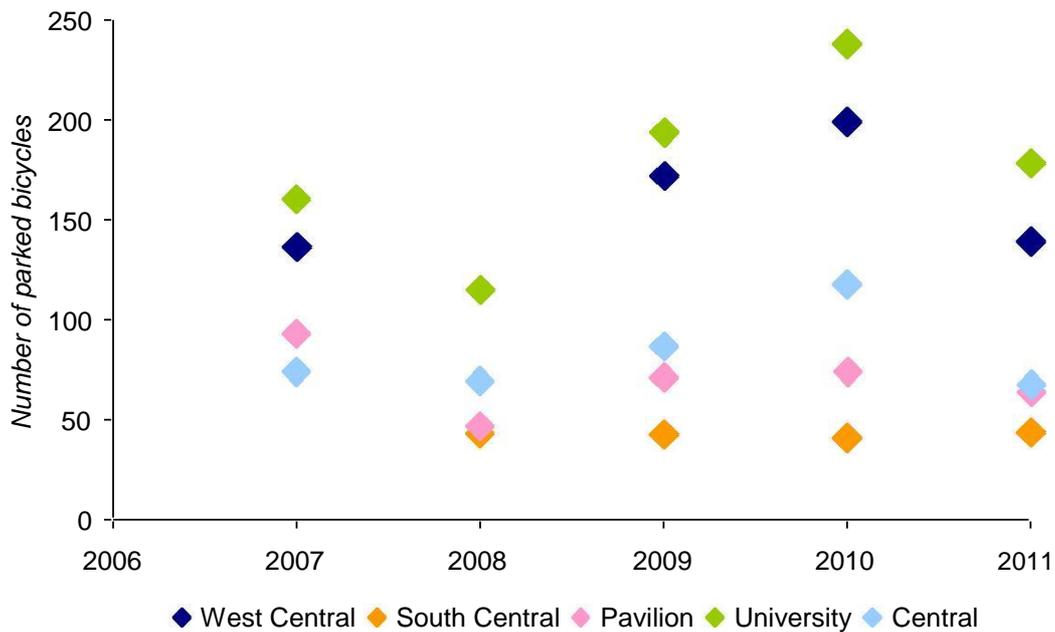
5.3 Analysis of counts of parked bicycles

Counts of parked bicycles have been performed in both public areas in Brighton and at a number of schools.

5.3.1 Counts of parked bicycles in Brighton and Hove

Annual counts of parked bicycles were undertaken in Brighton and Hove in January or early February of each year since 2007. Counts were undertaken in five beats, corresponding to different areas of the city. The number of bicycles counted on each beat are presented in Chart 5-2.

Chart 5-2 Number of bicycles parked by beat and year

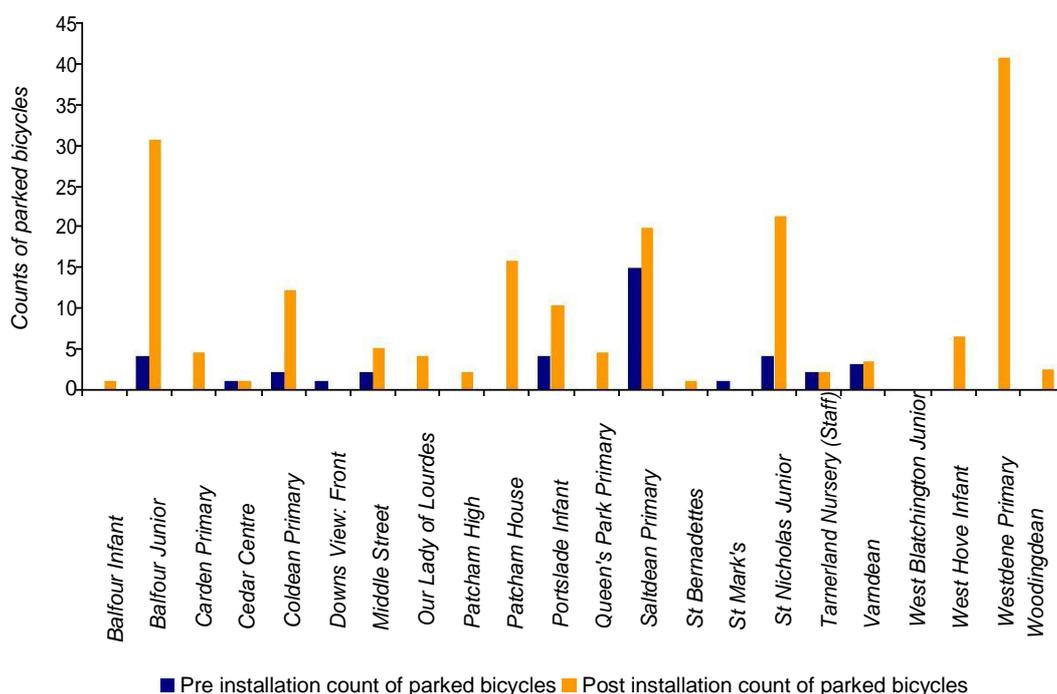


The counts of parked bicycles data indicate no clear change over time overall, with the exception of the University beat. Counts of parked bicycles recorded around the University increased by 33% between 2007-09 and 2010-11.

5.3.2 Counts of parked bicycles at schools

In 2009/10 additional cycle parking was installed at 22 schools in Brighton and Hove. Counts of parked bicycles were undertaken prior and subsequent to the installation. Chart 5-3 plots the pre and post installation counts for each school.

Chart 5-3 Counts of parked bicycles at schools which had cycle parking installed in 2009/10



Although a number of the schools had very similar counts before and after the installation of the cycle parking facilities, a substantial uplift was recorded at several schools. It should be noted, however, that no details on the time of year that counts were undertaken have been recorded and this may have impacted upon the counts recorded.

6 Analysis of workplace travel data

Data on mode of travel to work collected via iTrace has been provided by Brighton and Hove. Data collected across 21 workplaces in October 2010 indicate 11.4% cycle to work.

7 Analysis of behaviour and attitude surveys

A survey of attitudes to and participation in cycling was performed in Brighton in 2011, and 158 valid responses were obtained. Many of the questions were consistent with surveys undertaken in Brighton in 2006 and 2008. As the survey was advertised through the Sustainable Transport pages on Brighton and Hove City Council's website, it is possible that the respondents have a greater interest in and awareness of cycling than the general population.

Of those surveyed in 2011, 78% stated that they had observed an increase in the number of people cycling in Brighton over the past three years. The percentage of respondents agreeing that they enjoy cycling was 94% in 2011, a greater proportion than in the two previous surveys (2006: 78%, 2008: 79%). Of those surveyed, 40% said that they cycle to work on a daily basis. This is a 13%-point increase on 2008

levels. It is also matched by a decrease in respondents reporting that they never cycle to work of -13%-points since 2008, from 31% to 18%.

In the 2011 survey, 44% of respondents said that they had observed an improvement in the standard of cycling routes on roads over the last three years. This is a decrease from previous figures of 53% in 2006 and 54% in 2008. The percentage of respondents stating that they had noticed an improvement in the amount of cycling routes on roads also fell, from 64% in 2008 to 49% in 2011. In 2011 just over half of the respondents (53%) said that they had observed improvements in the amount of cycle parking available. This is consistent with previous figures: 50% in 2006 and 51% in 2008. Previous surveys have found that just over half of respondents in Brighton agree that if improvements were made to their local cycle network they would cycle more (2006: 55%, 2008: 59%). The corresponding figure from the 2011 survey was 71%.

The percentage of respondents agreeing with the statement “I would/do feel safe cycling in Brighton and Hove in terms of exposure to traffic” was 23% in 2011. This is consistent with the small increase identified between previous surveys (2006: 16%, 2008: 18%). This increase could be as a result of a significant amount of on-road measures introduced in Brighton, particularly advanced stop lines, toucan crossings and the separation of the cycle lane on Grand Avenue from other traffic.

8 Analysis of casualty data

Cycle user casualty data were derived for Brighton and Hove from STATS19 collision data. The average number of killed, seriously injured and slightly injured in each year prior to the Cycling Demonstration Towns/Cycling City and Towns programme (2003-2005) are compared to those occurring during the programme in Table 8-1. Considering all accidents, the difference between the time periods is not significant.

Table 8-1 : Annual average number of cyclists killed or injured in Brighton before (2003-2005) and during (2006-2010) the Cycling Demonstration Towns/Cycling City and Towns programme

	Annual average number of casualties			Total
	Killed	Seriously injured	Slightly injured	
Pre-programme	0.7	15.3	103.3	119.3
During programme	0.6	25.0	116.0	141.6

* significant change between the pre-programme and during programme figures (p<0.05)

9 Analysis of physical activity data

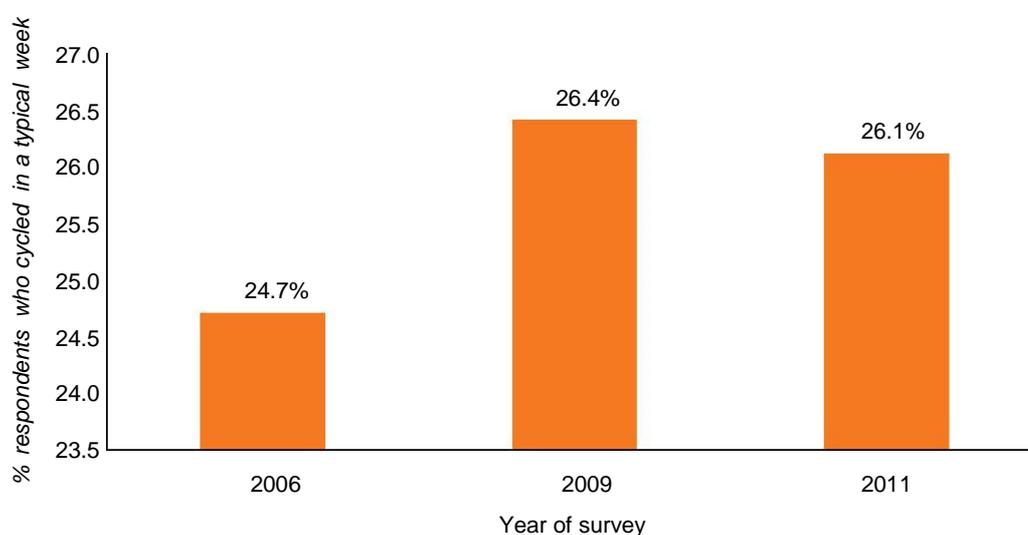
9.1 Household level surveys of physical activity

Household level surveys of physical activity were performed in Brighton in 2006, 2009 and 2011. A representative quota sample of residents were surveyed by telephone in March/early April each year. The core of the questionnaire was the physical activity measure taken from the European Prospective Investigation into Cancer (EPIC) study¹¹, the responses to which are used to create four categories: inactive, moderately inactive, moderately active and active. Those respondents stating that they had done some cycling in the past year were asked more detailed questions about their cycling frequency, duration and purpose. In the 2009 survey, additional questions were added asking about awareness of publicity about cycling in general (unprompted awareness) and the Cycling Demonstration Towns programme in particular (prompted recall).

9.1.1 Any cycling in a typical week

The proportion of respondents doing any cycling in a typical week was obtained from the EPIC question, in which respondents were asked about cycling in a typical week, alongside other types of activity. In 2006, 24.7% of respondents said they cycled in a typical week. By 2009 this figure was 26.4% and by 2011 it was 26.1%. None of these changes were statistically significant¹².

Chart 9-1 : Percentage of respondents who reported cycling in a typical week



¹¹ Wareham NJ, Jakes RW, Rennie KL, Schuit J, Mitchell J, Hennings S and Day NE. Validity and repeatability of a simple index derived from the short physical activity questionnaire used in the European Prospective Investigation into Cancer and Nutrition (EPIC) study. *Public Health Nutr.* 2003 Jun;6(4):407-13.

¹² $p > 0.05$ in both cases

9.1.2 Self-assessment

Respondents were asked to pick a statement that best described them as a cyclist, from: “new to cycling”; “starting to cycle again”; “an occasional cyclist”; “a regular cyclist”. In 2006, 23.8% said they were a cyclist (of some type); by 2009 this figure had increased to 25.8% (not significant: $p>0.05$) and in 2011 it remained at 25.8%. In each survey year, around 2-3% of cyclists said they were “new to cycling”.

9.1.3 Levels of physical activity

The EPIC questionnaire was used to place people into categories of overall physical activity (including cycling). The key indicator of interest for physical activity is the proportion in the ‘inactive’ category, as this is the category with the highest risk of premature mortality. Increasing cycling in this population (and reducing the proportion classed as inactive) would have tangible public health benefits. In all three years of the survey, 24.7% of respondents were classed as inactive.

9.1.4 Awareness of campaign activity

In research carried out to understand the success of the campaign, 30% of respondents said they had seen or heard some publicity in the town about a programme promoting cycling. In 2011, 25% of respondents recalled the name of the programme (Brighton and Hove Cycling Town) when prompted; this was recalled by 21% in 2009.

Those who were aware of the Cycling Demonstration Towns/Cycling City and Towns programme were asked what they thought about it, using a set of statements. A number of the statements presented positive views about the programme. Table 9-1 shows the proportion of people who agreed with these positive statements.

Table 9-1 : Percentage of people who agreed with the following statements

	% agree strongly or tend to agree
The campaign made me think about cycling	51%
The campaign made me want to cycle more	34%
The campaign made me give cycling a try	20%
The campaign helped me see cyclists' point of view rather than drivers'	45%

This shows that around half of the respondents thought the ‘campaign’ had helped them think about cycling, but only 20-34% considered converting this into action.

A number of the statements presented more negative views about the programme. Table 9-2 shows the proportion of people who disagreed with these negative statements and indicates high levels of support for local authority spending on the Cycling Demonstration Towns/Cycling City and Towns programme in Brighton.

Table 9-2 : Percentage of people who disagreed with the following statements

	% disagree strongly or tend to disagree
The campaign didn't tell me anything new	32%
I didn't take much notice of the campaign	26%
The local authority should not be spending money on cycling	71%

9.2 Active People Survey

The proportion of respondents cycling once or more per month decreased significantly between 2005/6 and 2010/11 (from 13.7% to 7.1%)¹³. However, the surveys undertaken in 2007/08, 2008/09 and 2009/10 all found a greater proportion of respondents cycling once or more per month compared against 2005/6 (16.9%, 14.7%, and 19.9%, respectively). A non-significant decrease was observed in the proportion cycling 12 or more times per month which fell 0.4%-points (from 1.9% to 1.5%) over the same period¹⁴.

10 Maps

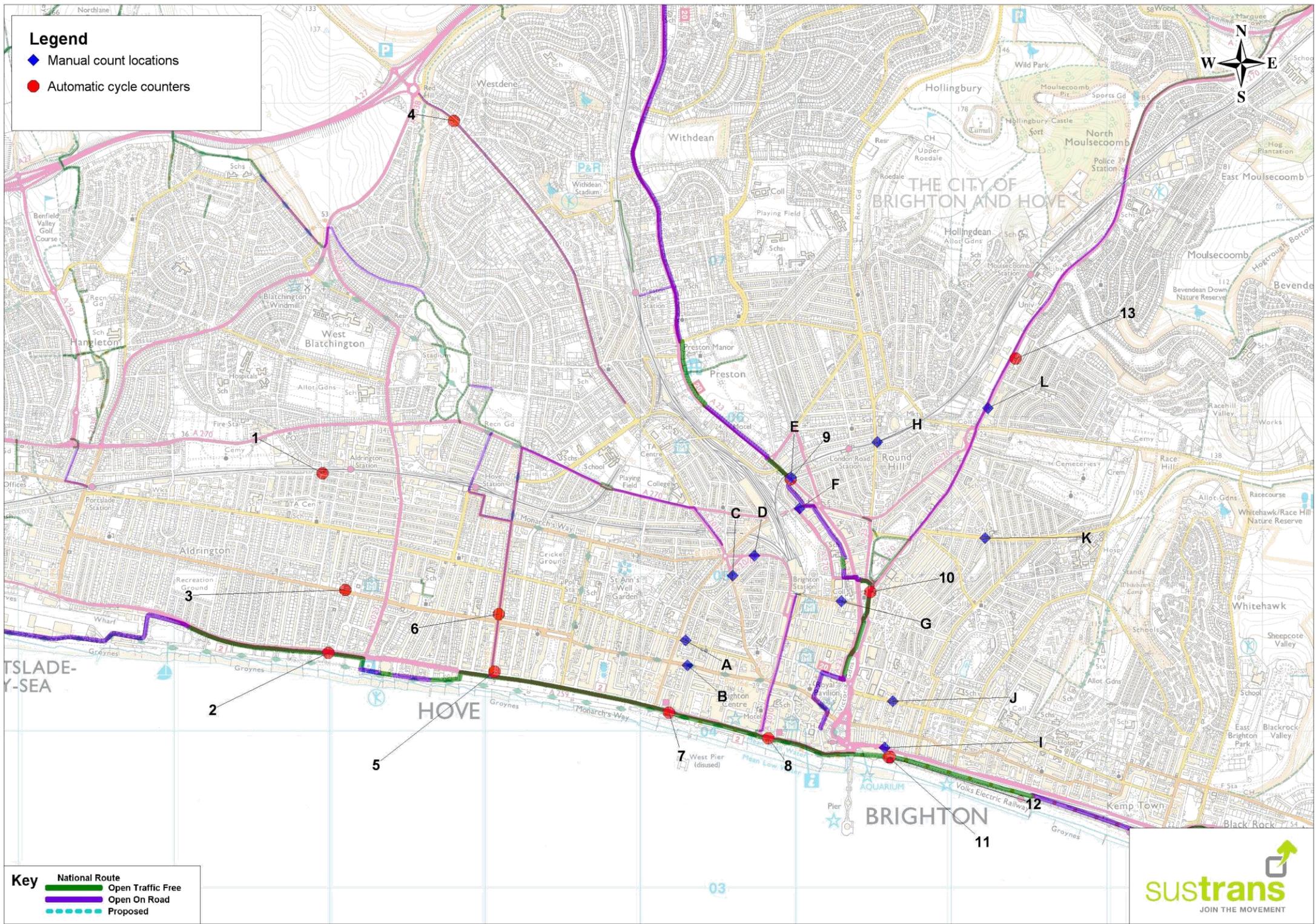
The following pages contain maps indicating the location of manual count and automatic cycle counter locations, and the estimated change in volumes of cycles recorded at these sites.

¹³ $p < 0.05$

¹⁴ Not significant, $p = 0.58$

Legend

- ◆ Manual count locations
- Automatic cycle counters



Key

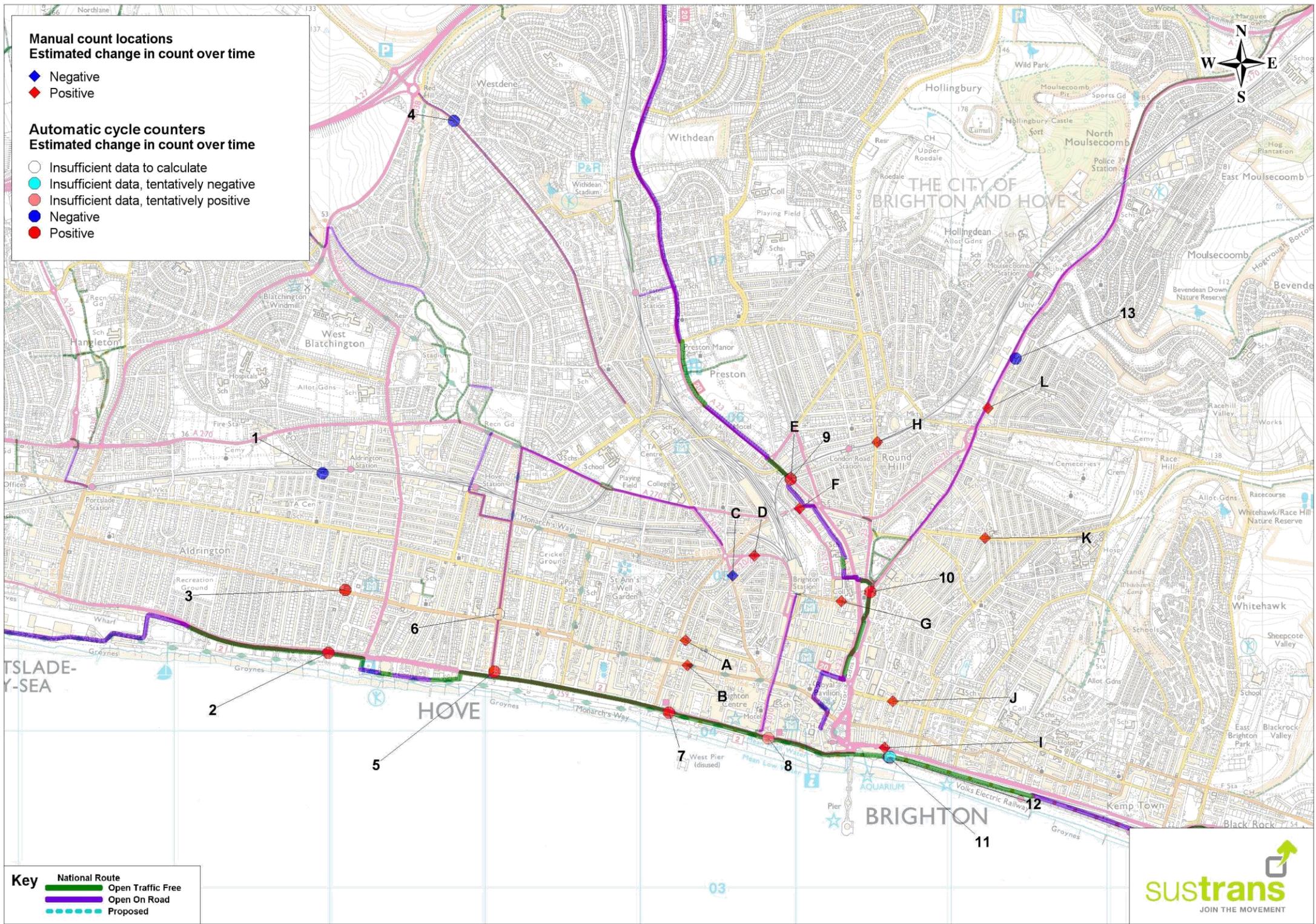
- National Route
- Open Traffic Free
- Open On Road
- Proposed

Manual count locations
Estimated change in count over time

- ◆ Negative
- ◆ Positive

Automatic cycle counters
Estimated change in count over time

- Insufficient data to calculate
- Insufficient data, tentatively negative
- Insufficient data, tentatively positive
- Negative
- Positive

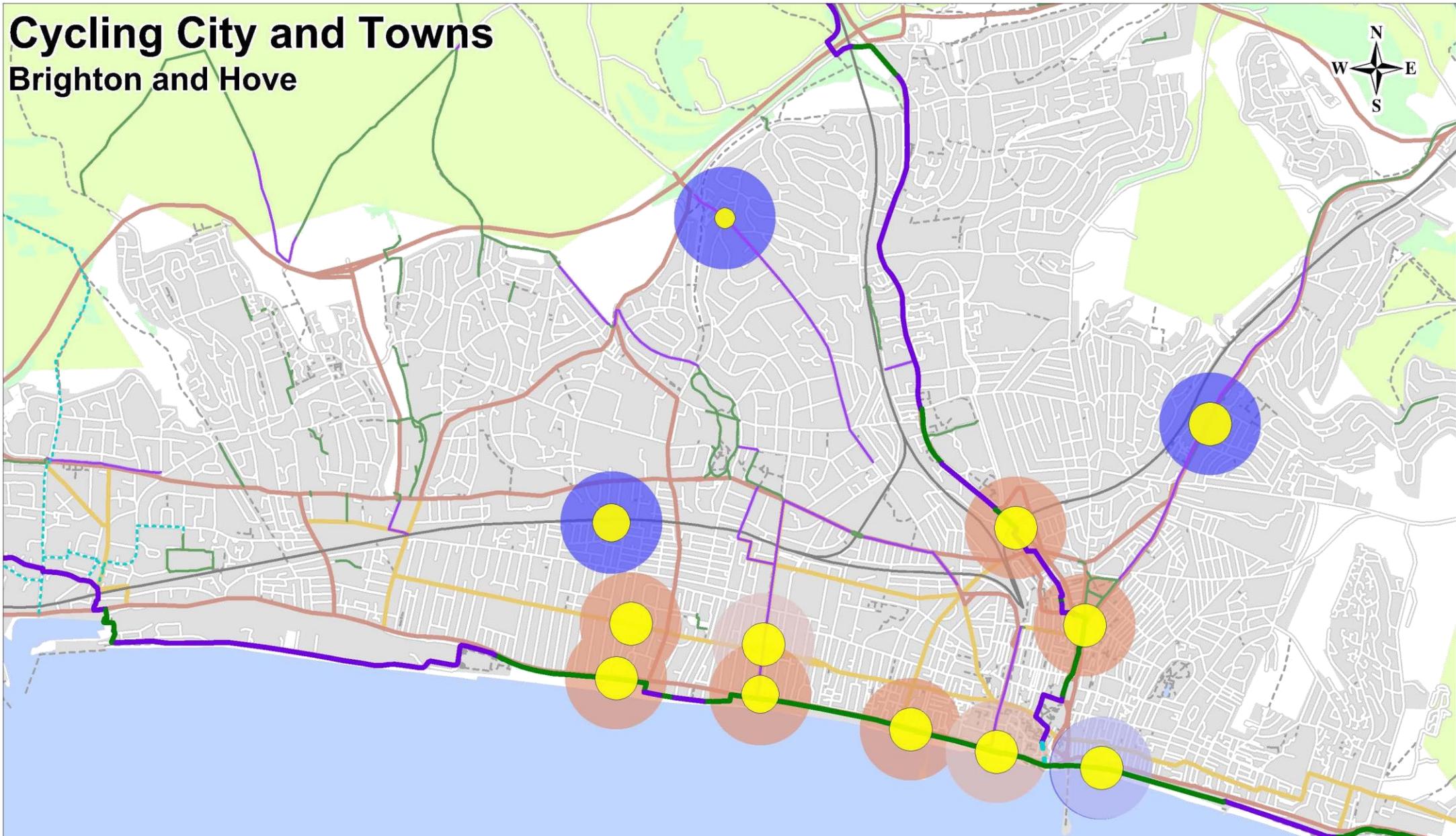


Key

- National Route
- Open Traffic Free
- Open On Road
- ⋯ Proposed

Cycling City and Towns

Brighton and Hove



Scale (at A4) 1:38,000
 0 760m

Key	
Signed Cycle Routes	Counters and Daily Median
Open traffic free	up to 2000
Open on road	up to 170
Proposed	up to 100
	up to 50
	Change over time
	+29-44%
	+19-29%
	No change
	Tentatively positive
	-2 to -10% decrease
	-10 to 33% decrease

