Bikeability Impact Study

Final Report

A study commissioned by the Department for Transport

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SQW

BPSR
Bryson Purdon Social Research

Contents

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This report has been compiled by the SQW Bikeability evaluation team in partnership with Bryson Purdon Social Research: Marian Morris, Dan Hardy, Maya Agur, Imogen Sprackling, Susan Purdon and Caroline Bryson.

Executive summary

1. Bikeability is a practical training programme, offered at three levels, that aims to develop children and young people's skills and confidence to cycle on roads and ultimately encourage more people to cycle more safely, more often. It is funded by the Department for Transport (DfT) and delivered through local authorities and School Games Organiser Host Schools. In 2017/18 (the last financial year with available programme monitoring data), 353,582 DfT-funded Bikeability training places were delivered in just under half of all primary schools in England (outside London, where Bikeability is managed by Transport for London).

2. SQW and Bryson Purdon Social Research (BSPR) were commissioned by the DfT to evaluate the effectiveness of Bikeability. The primary aim of the evaluation was to establish whether participation in Bikeability increases primary school pupils' propensity to cycle. As well as looking for an overall impact on the proportion of pupils who cycle, the evaluation focused, in particular, on road cycling, on cycling with adults or older siblings, on parents/guardians allowing their children to ride on roads, on pupils' self-reported road cycling confidence and on their safety knowledge.

3. The impact of participating in Bikeability was measured through a quasi-experimental design, comparing the outcomes (cycling behaviour, confidence, etc.) of Year 6 pupils in schools offering Bikeability to Level 2 in Year 5 (referred to as the Bikeability schools) with those of a comparison group of Year 6 pupils in schools where the training is not delivered to most pupils until Year 6, if at all (the comparison schools). The evaluation focused on participation in Bikeability Levels 2 and 3, as Level 1 involves simply a two-hour session in a traffic-free environment.

4. The evaluation found positive, and statistically significant, impacts associated with participating in at least Level 2 Bikeability training on a range of Year 6 pupil outcomes, including cycling rates since the start of term, whether pupils have cycled on the road in the past week, whether parents allow their children to ride on roads and pupils' knowledge of how to ride on roads safely.

5. The proportion of Year 6 pupils in the Bikeability schools who cycled since the start of term was statistically significantly greater (65 per cent) than the proportion in comparison schools (56 per cent). In addition, Bikeability was associated with a positive impact on the proportion of Year 6 pupils who had cycled on roads in the past week (34 per cent compared with 22 per cent in the comparison schools).

6. While there is no significant impact of Bikeability on pupils' confidence in cycling on roads, Bikeability increases the propensity for parents/guardians to allow their children to ride on roads (reported by 70 per cent of pupils in Bikeability schools compared to 58 per cent in comparison schools, a 12 percentage point difference). This implies that Bikeability positively impacts on parents'/guardians' confidence in their children's cycling skills and road safety.

7. Pupils in Bikeability schools were significantly more likely (22 per cent compared to seven per cent) to have answered a survey 'quiz' question correctly about where to look before getting on to a road at a junction.

8. The evidence from the pupil surveys is corroborated by parents'/guardians' positive reports of Bikeability, with substantial proportions reporting that their children are more confident in their cycling abilities and cycle more often. Nearly all parents/guardians whose children had not been offered Bikeability would take up an offer of training if given.

9. The impacts are greater among pupils in schools with a higher than average proportion of Key Stage 2 pupils eligible for free school meals. There is no strong evidence of the impacts being greater among those who were cycling, or more confident about cycling, in the Autumn term of Year 5, or by gender.

10. Currently, pupils with higher levels of cycling confidence and those who cycled more frequently in Year 5 were more likely than others to receive a Level 2 Bikeability certificate, as are those whose parents/guardians allowed their Year 5 children to cycle on the road.

11. Given the positive impacts of Bikeability, it would be worth considering how to increase the uptake of Bikeability among those with lower levels of road cycling confidence and those less likely to cycle since they are currently less likely than others to have achieved Bikeability certification by the Autumn of Year 6.

1. Introduction

Overview

1.1 SQW and Bryson Purdon Social Research (BSPR) were commissioned by the Department for Transport (DfT) to evaluate the effectiveness of Bikeability, with the primary aim of the evaluation being to establish whether being offered Levels 2 or 3[1] of the programme in primary schools increases pupils' propensity to cycle. As well as looking for an overall impact on the proportion of pupils who cycle, the evaluation has focused, in particular, on road cycling, on cycling with adults or older siblings, on parents' allowing their children to ride on roads, on pupils' self-reported road cycling confidence and on their safety knowledge.

1.2 The impact of being offered Bikeability has been measured through a quasi-experimental design, comparing the outcomes (cycling behaviour, confidence, etc.) of Year 6 pupils in schools offering Bikeability training to Level 2 in Year 5 (the Bikeability group) with those of a matched group of Year 6 pupils in schools where the training is not delivered to most pupils until Year 6, if at all (the comparison group).[2] In other words, all schools in the study had offered (or would offer) Bikeability to their pupils, but to different year groups and/or at a different point in the school year.

1.3 The main analysis uses longitudinal survey data collected from pupils when they were in Year 5 in Autumn 2017 and again when they were in Year 6 in Autumn 2018. In each year, the surveys collected self-reported information on pupils' cycling behaviour and confidence. The impact of Bikeability is measured by comparing the outcomes of Year 6 pupils in schools where the take up of Bikeability:

- is **high** in Year 5 (that is, 40 per cent or more of the Year 6 pupils reported having participated in Bikeability Levels 2 or 3 during Year 5 or very early in Year 6)
- is **low** in Year 5 (schools where fewer than 40 per cent of Year 6 pupils reported having participated in Levels 2 or 3 during Year 5 or very early in Year 6).

1.4 The first group of schools are referred to in this report as the '**Bikeability group'** (with an average of 66 per cent of pupils having taken part in Level 2 training), the second as the **comparison group** (with an average of 13 per cent of pupils having taken part in Level 2 training by the time of the survey, although schools were expected to offer training later in Year 6) and all schools recruited had offered Bikeability training in the past. The data collected when the pupils were in Year 5 has been used to control for any pre-Bikeability differences in the cycling behaviours and confidence of the pupils in the Bikeability and comparison schools. The fact that the percentage taking part in Level 2 training in the

[1] Level 1 is a two-hour course which takes place in a traffic-free environment, see below for a description of the programme.
[2] The stated plans for the schools in the comparison group have been checked. Some did not state whether they would deliver Bikeability in Year 6 and some stated they were planning delivery later in the year. The majority say they do not know when they will deliver Bikeability. None, however, stated that they would definitely not deliver Bikeability.

comparison schools is greater than zero means that the impacts presented in this report are likely to be slightly underestimated[3].

1.5 There are just 12 schools in the comparison group for the longitudinal analysis (compared with 19 in the Bikeability group). Of these 12, the percentage of Year 6 pupils reporting participation at Level 2 is zero for four schools, and the assumption is that in these schools Level 2 training has not yet been offered. For the other eight the percentage ranges from 11 per cent to 33 per cent. It is very unclear how and why these non-zero, but still relatively low percentages have arisen. This *might* reflect a lower than average level of interest in cycling and Bikeability amongst pupils in these schools. The analysis controls for differences in the level of cycling reported by the pupils at baseline, so if this is the case it is factored into the estimates of impact as far as possible. Most plausibly, however, is that these schools had simply not yet offered Level 2 to <u>all</u> of their Year 6 pupils by the autumn term of 2018.

1.6 Given that the data for the evaluation has been collected in the Autumn term, our design does not allow for the impacts of taking Bikeability *after* September or October of Year 6 to be measured. To do so would have involved either running the surveys just before the end of the summer term or tracking pupils from Year 6 into Year 7, at which point they would have changed schools. However, our expectation is that the Year 6 impacts would be at least as large, and possibly larger than, the impacts we report on for take-up in Year 5. Note further, that, although we refer to Level 2 or 3 training, in practice only a very small percentage (three per cent) of the Year 6 pupils in the Bikeability schools reported having taken part in Level 3 training, so the impacts we report should be attributed predominantly to Level 2 training.

1.7 The primary analysis (Section 6) focuses on the **longitudinal subset** of pupils who completed the survey twice - in both 2017 and 2018, when they were in Years 5 and 6 respectively. This group has been narrowed further to just those who, at Year 5, had either not taken up Bikeability or who had participated in, at best, Level 1 training, so that we have a pre-Level 2 baseline for these pupils. For this subset we can compare Year 6 outcomes for pupils in Bikeability schools with comparison schools *after* controlling for any Year 5 baseline differences. This helps isolate the Bikeability impact.

1.8 We also report on **differential** impacts of Bikeability across **different pupil populations**: by gender, by proportion of free school meal pupils in the school, and by their cycling patterns and confidence in Year 5. In Section 7, we report on parents' perceptions of the effect of the training on their child.

1.9 In summary, we find **positive, and statistically significant, impacts associated with being offered at least Level 2 Bikeability training on a range of Year 6 pupil outcomes**, including cycling rates since the start of term, whether pupils have cycled on the road[4] in the past week, whether parents allow their children to ride on roads and pupils' knowledge of how to ride on roads safely. The impacts appear greater among pupils in schools with a higher than average proportion of Key Stage 2 pupils eligible for free school meals and among those who were cycling, and more confident about cycling, in the Autumn term of Year 5. However, there is evidence of benefits for all the sub-groups of pupils studied.

[3] The difference in the percentage offered Level 2 between the two groups is 53 percentage points. If the comparison group offer percentage had been zero, the difference would have been 66 percentage points. This suggests that impacts may have been underestimated by a factor of around 53/66=0.8.
[4] Presented in the questionnaire as photographs.

The Bikeability programme

1.10 Bikeability is the Government's cycle training programme based on the National Standard for cycle training (the National Standard). Between 2016 and 2020, the Department for Transport (DfT) provided £50 million to 160 applicant Local Highway Authority (LHA) and School Games Organiser Host School (SGO) grant recipients. Bikeability is delivered in England by around 350 active Bikeability providers and 2,500 active Bikeability instructors who are registered with the Bikeability Trust, the charity that manages the Bikeability programme for the DfT.

1.11 Bikeability training is delivered at three levels:

- Bikeability **Level 1** is delivered in motor traffic free cycling environments and aims to develop mastery in cycle handling and prepare riders for cycling on the road
- Bikeability **Level 2** is delivered on single-lane roads and simple junctions with moderate motor traffic flows and aims to develop riders' skills and confidence for cycling in progressively more challenging road cycling environments
- Bikeability **Level 3** is delivered on complex, often busy roads and junctions, sometimes with speed limits above 30 mph, and aims to develop riders' skills and confidence to cycle in diverse road environments, wherever cycling is permitted.

1.12 The National Standard and Bikeability were launched in England in 2007 to replace a diverse range of local authority cycling proficiency schemes. In 2017/18 (the last financial year with available programme monitoring data), 353,582 DfT-funded Bikeability training places were delivered in 49% of all primary schools in England (outside London, where Transport for London has oversight). Currently, more than half (52%) of all children (outside London) participate in Bikeability courses at Levels 1 and 2 (combined) or Level 2 (alone) before leaving primary school, mostly in school Years 5 or 6. Smaller numbers of training places are delivered at Level 1 (mostly in school Years 3 and 4) and at Level 3 (mostly in secondary school). In addition, some Bikeability training is delivered during school holidays.

1.13 The UK-wide National Standard for cycle training provides assessment criteria for the delivery of Bikeability in England, but **there is no single Bikeability delivery model** in England. Bikeability variants also exist in Wales, Scotland and Northern Ireland, and the DfT does not fund Bikeability in London, where Transport for London operates different funding, programme monitoring and quality assurance processes. Many grant recipient Local Highway Authorities (LHA) and School Games Organiser Host Schools (SGO) employ or contract Bikeability instructors to deliver Bikeability directly to schools, while others outsource delivery of their DfT-allocated Bikeability training places to commercial or voluntary sector providers.

1.14 The scale of delivery in LHA and SGO grant recipient areas varies widely. All but two English LHAs (Cornwall and Norfolk) applied for DfT Bikeability grant funding in 2016. Outside London, the DfT provides £40 per training place for the combined Level 1 and 2 courses, but some grant recipients supplement DfT funding with contributions from local authorities, schools or parents. The combined Level 1 and 2 courses last 6 hours (DfT grant funding requirement) but may be delivered over two days, one week or several weeks, with Level 2

delivered by one instructor and up to six trainees or (more typically) two instructors and up to 12 trainees.

Overall design and aims of the evaluation

1.15 The evaluation focuses on the delivery of Bikeability training in primary schools, with its overall aim to test whether Bikeability Levels 2 or 3 have an impact on pupils' propensity to cycle. This is measured in terms of pupils' cycling behaviours, pupil confidence, parental permission to cycle on roads and pupils' knowledge of road safety, with the key research questions being what impact Bikeability has on:

- whether, how often and where primary pupils cycle
- whether pupils perceive that children of their age whom they know are cycling
- how confident pupils feel about cycling on roads
- how confident parents feel about letting their children cycle on roads (alone/with friends, or with adults);
- pupils' knowledge about road safety.

1.16 In addition to an interest in the overall impacts of Bikeability, the evaluation has also addressed the question of whether there are differential impacts across gender, school-level deprivation measured using the percentage of pupils in receipt of free school meals[5], and pupils' experiences of cycling prior to doing Bikeability.

1.17 These questions have been addressed through a quasi-experimental design, comparing the outcomes (cycling behaviour, confidence, etc.) of Year 6 pupils in schools offering Bikeability to Level 2 in Year 5 (the Bikeability group) with those of Year 6 pupils in schools where the training (based on school information obtained at the time of recruiting) is not delivered to most pupils until Year 6, if at all (the comparison group), after controlling for any baseline differences between the two groups. Although it would be preferable also to measure the impacts of delivery in Year 6, there are potential logistic barriers to conducting post-Bikeability surveys to these cohorts, who would either have to be surveyed at the end of their final term or after having transferred to other schools by Year 7. In Annexes A and B, we also report on two alternative approaches to measuring impact, both of which produced a very similar pattern of results to the main 'intention to treat' analysis that is reported in Section 6.

1.18 The main source of data for the evaluation comprises whole class pupil e-surveys. A baseline survey among pupils in Years 5 and 6 was conducted in Autumn 2017, with a follow-up survey conducted in Autumn 2018 with Year 5 (new intake) and Year 6 (previously in Year 5) pupils. Some schools (38) were included in both 2017 and 2018, but many only took part once. For the schools taking part twice, it has been possible to generate linked Year 5 and Year 6 responses for **755 pupils** in 31 of the 38 schools (in seven of the schools participating for a second time, the survey was completed only by Year 5 and not by Year 6 pupils). In addition,

[5] We are unable to look at differential impacts in urban versus rural areas via the longitudinal dataset, as none of the comparison group schools in the longitudinal analysis (see Sections 2 and 3) are rural. See Annex C for further discussion.

data was obtained from parents/guardians completing an e-survey about their own cycling behaviour and that of their children.

1.19 Figure 1-1 illustrates how the pupil groups, or cohorts, progress through the study. Cohort A - Year 6 pupils surveyed in Autumn 2017 – are a comparator baseline, but were not followed up in 2017/18, as they had made the transition to secondary school. Cohort B - comprised of Year 5 pupils in both programme and comparison schools - represent the group of pupils that formed the basis of the longitudinal analysis. The research design meant that Cohort C – the new intake of Year 5 pupils surveyed in Autumn 2018 – had the potential to form the basis for a new longitudinal cohort (with Cohort D representing an additional new group of pupils in the follow-up year).

Figure 1-1: Study cohort progression

School Year	Year 5	Year 6
2017/18	Cohort B	Cohort A
2018/19	Cohort C	Cohort B
(2019/20)*	Cohort D	Cohort C

*Source: SQW; Note: * if study was to be continued into a third year*

Outline of the report

1.20 The subsequent sections of this report cover:

- **Section 2:** the data collection;
- **Section 3:** the analytical approach;
- **Section 4:** the outcome measures;
- **Section 5:** the profile of those taking up Bikeability;
- **Section 6:** estimates of the impact of Bikeability obtained by comparing pupils in Bikeability schools with those in comparisons schools (an 'intention to treat' analysis). Comparing Year 6 pupil responses in Bikeability and comparison schools, using these pupils' Year 5 responses to control for pre-Bikeability differences – we report on the overall impact of Bikeability, and differential impacts across key sub-groups;
- **Section 7:** parents' perceptions of the effect of Bikeability on their children's cycling behaviour and confidence;

- **Section 8:** summary and conclusions;
- **Annex A** replicates the all-pupil analysis in Section 4, using cross-sectional school data rather than longitudinal data. This cross-sectional 'intention to treat' analysis provides us with a larger sample size than that available for pupils where we have longitudinal data on both their Year 5 and Year 6 outcomes.
- **Annex B** estimates the impact of Bikeability on those participating in Bikeability Level 2 or 3 training in Bikeability schools (i.e. the 'impact on the treated'). Replicating the overall design reported in Section 4, this analysis compares the outcomes of Year 6 pupils participating in Bikeability with those of Year 6 pupils who have no Bikeability experience, or only Level 1, in comparison schools. This provides measures of impact on those who had participated ('impact on the treated') rather than the impacts observed across the whole year group (some of whom will have participated in Bikeability and others who will not have done so), though we can be less sure that any observed differences in outcomes are due to Bikeability rather than unobserved factors which may influence a pupil to take up Bikeability or not.
- **Annex C** provides a technical description of the various analyses that were carried out.

2. Data collection

Summary of recruitment strategy

Rationale

2.1 The study targeted primary schools that had delivered Bikeability training to their pupils *at least once* over the past three years. This was a deliberate sampling choice; we opted to approach only those schools, as recent research suggests that the characteristics (including deprivation and ethnicity) of pupils who participated in Bikeability training in such schools tend to be different than those of pupils in schools in which Bikeability had not been offered,[6] and therefore could include some systematic differences that could have an impact on any comparative analyses. The schools' contribution to the evaluation study was voluntary and participating schools received their individual school's data and a set of lessons plans as a 'thank you' for taking part.

2.2 We aimed to recruit a total of 667 schools, and around 10,000 pupils across both year groups. The details of the recruitment strategy are set out in the section below. Details of how schools were subsequently identified as either treatment schools or comparison schools is provided in Section 3.

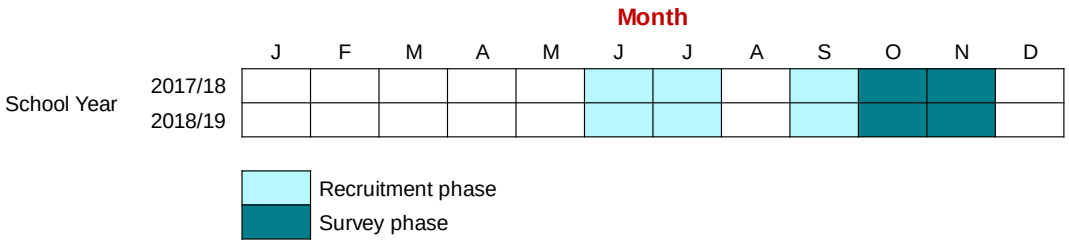
Approach

2.3 Local Authorities (LAs), School Games Organisers Host Schools (SGOs) and London Boroughs (LBs) were informed about the evaluation by email and were given the opportunity to promote it to schools within their locality or to withdraw them from the study. We sought this endorsement from LAs, SGOs or LBs to make schools more receptive to being involved in the evaluation.

2.4 The recruitment campaign for the baseline survey in 2017 included two rounds (in June and September). Figure 2-1 presents the phased design of the study. In total 7,410 schools have been invited to take part. This led to a total of 478 schools being recruited, which represented 72% of the initial target of 667. The follow-up recruitment campaign was launched in June 2018, with a second round conducted in September 2018. It included 6,800 schools that had not opted out of the study at the time of the baseline recruitment (610 schools). This led to the recruitment of a total of 356 schools; 124 schools that had taken part in the baseline survey and 232 schools that had not (see Table 2-1).

[6] Goodman, Van Sluijs, Ogilvie, 'Cycle training for children: which schools offer it and who takes part?' *Journal of Transport Health*, 2015/2: 512–21

Figure 2-1: Study recruitment and survey phasing



Source: SQW

2.5 For both the baseline and follow-up surveys, schools were invited by email to take part in the evaluation and were asked to carry out four steps:

- **Complete a school registration form** This asked schools to nominate a senior school leader with whom the researchers could liaise, and to confirm that they had sufficient computer capacity to administer the e-surveys. For the follow-up survey the schools that took part in the baseline survey were simply asked to re-confirm their participation and registration details.
- **Email parents/guardians of pupils in Year 5 and Year 6.** The email, drafted by SQW, sought consent for their children to participate in the e-surveys, and invited parents/ guardians to complete an e-survey themselves.
- **Maintain a pre-prepared pupil register**. This contained unique identifier codes for all pupils (generated by SQW, but assigned and held by the schools) completing the e-surveys.
- **Ensure staff involved followed the step-by-step guide** to take part in the evaluation and collect data from pupils.

2.6 To boost the response rate, tailored follow up emails were sent to schools who had started completing the registration form, schools who had opened at least one email, and schools who had not opened any emails. This was supported by a telephone campaign encouraging schools to take part in the evaluation and offering support where needed.

2.7 The recruitment campaign was managed through a designated Bikeability study email account accessible by all the study team members. Schools were able to contact the study team via the email address with any questions or concerns. The Bikeability email account was monitored routinely, in peak periods up to five times a day, in order for schools to receive timely responses. The study team responded to queries via email and over the phone. Schools were also provided a named contact in the study team, whom they could approach directly by phone with any queries.

Overview and profile of recruited, participating schools

2.8 Across the baseline and follow-up survey, a total of 252 schools returned some completed surveys (see Table 2-1). For analytical purposes, however, data from 66 schools was removed from the dataset before detailed analysis, primarily because it appeared that surveys had not been completed to protocol. This included schools:

- that had completed only one or two survey questionnaires, which suggested that the surveys were completed as a test exercise by a teacher rather than by pupils.
- where there were fewer than 10 pupil responses from a year group or, in the case of very small schools, where the number of completed responses represented less than 50% of pupils on the school roll for that year group.

2.9 In total, 14,434 pupils completed surveys[7] (8,721 pupils completed a survey in 2017 and 5,713 pupils completed the survey in 2018). This included 4,580 Year 5 pupils and 4,074 Year 6 pupils in 2017; and 2,662 Year 5 pupils and 3,000 Year 6 pupils in 2018[8]. The full statistical analysis reported in Section 4 was carried out on pupils for whom there was matched data from Year 5 and Year 6 (755).

Table 2-1: Total number of schools with completed surveys

	Baseline (2017)	Follow-up (2018)		Total number of schools participating
		Repeat	New	
Total number of schools…	7,410	478	6,322[9]	
…registered	478	124	232	710
…with some completed surveys	184	62	68	252
Percentage of 'registered in year'	38%	50%	29%	35%
…with useable completed surveys	141	38	45	186
Percentage of 'registered in year'	29%	31%	19%	26%

Source: SQW

2.10 The table indicates that there was clearly some attrition in the number of schools between registering to take part and then participating. The number of schools recruited, despite the steps taken to engage with schools, was below our initial target. Throughout, and following, the recruitment rounds, feedback was collated to understand the challenges schools were reporting, and their reasons for not taking part. Of the schools that gave a reason, the majority cited capacity issues, both in terms of undertaking the study with their pupils, and in terms of completing the survey process before the initial deadline (sometimes linked into fitting in

[7] Based on schools that returned useable data.
[8] The numbers broken down by school year do not add up to the total number of responses, as a small proportion of pupils preferred not to say what school year they were in.
[9] 610 schools opted out from any further communications from the study bringing the total number of schools approached in 2018 to 6,800.

with their curriculum plans). Others mentioned challenges in terms of gaining access to decision- makers to agree participation in the first instance.

2.11 Feedback from registered schools that did not participate in the study suggested that the most common reason for not taking part was time pressure with school staff not being able to fit the survey in to the timetable in the four to five weeks timeframe that was allocated. In other cases, changes in staffing between registration and participation sometimes meant that replacement staff were not aware of the study or the new contact details were not passed on to us, so we could not confirm participation. In addition, in schools where no named member of staff was noted as the contact for Bikeability or the study, emails had to go to a general administrative address. In these cases, the emails tended to get overlooked, and even when the school had registered, no-one took responsibility for following this up and so the school did not take part.

2.12 Table 2-2 sets out the profile of the participating schools in terms of region, the percentage of pupils in receipt of free school meals, the index of deprivation (based on the postcode of the school), and whether the school is in an urban or rural location. The distribution suggests that the study recruited a good spread of schools across regions, urban and rural locations and pupil profile.

Table 2-2: Profile by Year Group for schools that returned useable data

	Schools completing survey										England primary schools[10]
			Longitudinal Sample				Cross-sectional sample				
	Total		Bikeability Schools		Comparison schools		Bikeability Schools		Comparison schools		
	n	%	n	%	n	%	n	%	n	%	%
Region											
East Midlands	18	10	1	5	0	0	1	4	5	13	10
East of England	17	9	2	11	1	8	2	7	4	11	12
London	21	11	1	5	4	33	1	4	2	5	11
North East	6	3	1	5	0	0	-	-	-	-	5
North West	35	19	3	16	3	25	7	26	7	18	15
South East	19	10	2	11	3	25	3	11	5	13	15
South West	21	11	2	11	0	0	3	11	6	16	11
West Midlands	14	8	1	5	0	0	3	11	3	8	11
Yorkshire and the Humber	16	9	3	16	1	8	3	11	4	11	11
Region unclear	19	10	3	16	-	-	4	15	2	5	-

[10] Percentages based on data from 23,462 Primary Schools in England that could be matched – using their postcode – to the IMD and Rural-Urban classification datasets.

	Schools completing survey										England primary schools[10]
			Longitudinal Sample				Cross-sectional sample				
	Total		Bikeability Schools		Comparison schools		Bikeability Schools		Comparison schools		
	n	%	n	%	n	%	n	%	n	%	%
% of pupils in receipt of Free School Meals											
0-5%	41	22	3	19	0	0	8	34	14	39	34
6-10%	46	25	6	38	2	18	5	22	6	17	21
11-20%	37	20	5	31	4	33	6	26	8	22	24
21-30%	26	14	2	13	6	50	2	9	5	14	12
31-100%	17	9	0	0	0	0	2	9	3	8	9
Percentage unknown	19	10	3	19	-	-	-	-	-	-	-
Index of Multiple Deprivation (IMD) Decile											
1 (most deprived)	18	10	0	0	3	25	1	4	5	13	9
2	13	7	1	5	2	17	2	7	2	5	9
3	23	12	1	5	3	25	1	4	4	11	10
4	16	9	3	16	0	0	2	7	3	8	9
5	17	9	1	5	1	8	0	0	6	16	10
6	19	10	1	5	1	8	4	15	6	16	11
7	19	10	2	11	0	0	5	19	2	5	11
8	29	16	4	21	3	25	5	19	6	16	11
9	18	10	4	21	0	0	3	11	1	3	10
10 (least deprived)	14	8	2	21	0	0	4	15	3	8	10
School location											
Rural town and fringe	25	13	4	21	0	0	3	11	4	11	11
Rural village and dispersed	28	15	2	11	0	0	3	11	10	26	15
Urban city and town	61	33	8	42	5	42	0	0	2	5	40
Urban conurbation	72	39	5	26	7	58	13	48	11	29	35

Source: SQW survey and National Statistics (2018) Schools, pupils and their characteristics – LA tables

Overview and profile of participating parents

2.13 The parents/guardians of the pupils in Years 5 and 6 in these schools were invited to respond to a parent e-survey about their own, and their child's (or children's), cycling behaviour. In total, 1,430 parents from 184 schools responded to the survey. This included 795 parents/guardians of Year 5 pupils and 620 parents/guardians of Year 6 pupils (15 parents did not indicate their child's year group). Table 2-3 provides a profile of the parent e-survey responses.

Table 2-3: Profile of parents/guardians by survey year

	2017 ***%***	***2018*** ***%***
Gender (parent)		
Male	17	16
Female	81	83
Prefer not to say	1	1
Gender (child/pupil)		
Boy	55	52
Girl	44	48
Prefer not to say	1	1
Child/pupil year group		
Year 5	56	56
Year 6	43	44
Prefer not to say	1	1
Family cycling		
Child has bicycle that works	Yes - 94	Yes - 92
Parent has bicycle that works	Yes - 77	Yes – 76
Child cycles with family members cycle at least once a month	65	61
Bases		
Total parents	*936*	*494*
Parents of Year 5 pupils	*521*	*274*
Parents of Year 6 pupils	*404*	*216*

Source: SQW analysis of Parents/Guardians' E-survey

3. Analytical approach

3.1 The analysis of the data collected to support the evaluation is complex. It is possible to generate estimates of impact in various ways, although all depend on comparisons between a 'treatment group' and a 'comparison group'. We have made use of a number of the available methods in this report, including 'intention to treat' analysis, longitudinal intention to treat' analysis and a cross-sectional 'intention to treat' analysis and an 'impact on the treated analysis'. These are discussed below.

Intention to treat analysis

3.2 The study was designed primarily to generate the impact of Bikeability on individual-level outcomes using a school-level design, where schools are designated as treatment or comparison. This is akin to an **'intention to treat'** analysis.

3.3 For this analysis, Year 6 pupils in schools where Level 2 Bikeability has been delivered to a large percentage of those pupils (when in Year 5) are compared to Year 6 pupils in schools where Level 2 Bikeability has been delivered to a much smaller percentage.

3.4 The threshold we have used is 40 per cent: schools where at least 40 per cent of the Year 6 pupils said they had participated in Level 2 training (at least by early Year 6) have been assigned to the 'Bikeability' group, and schools where fewer than 40 per cent had taken part in such Level 2 training over the same time frame have been assigned to the comparison group, with the assumption being that most will receive such training later.

3.5 The threshold of 40 per cent is somewhat arbitrary but was chosen because it gives a reasonably even split of schools and pupils between the groups. In our designated Bikeability schools, 66 per cent of Year 6 pupils said they had experienced Level 2 training (receiving a certificate), but in comparison schools just 13 per cent said they had such training at the time of the survey. The fact that the percentage taking part in Level 2 is not zero in the comparison group means that impacts are likely to be slightly underestimated[11].

Longitudinal intention to treat analysis

3.6 For the analysis presented in Section 6 we have restricted the **all-pupil-level analysis** to those pupils for whom we have longitudinal data; that is, pupils who completed the Autumn 2017 survey when they were in Year 5, who repeated the survey in Autumn 2018 when they were in Year 6 and for whom it proved possible to link their two responses. In total there are 755 such pupils: 419 of them from 19 Bikeability schools and 336 from 12 comparison schools. Although the 755 are a subset of all pupils from these schools, there is no evidence that they are a biased subset (see Annex B). From the 755, we also excluded pupils who reported in Year 5 that they had already taken part in Level 2 training, so that we have a pre-Level 2 baseline. This reduces the dataset to 684 pupils (369 Bikeability; 315 comparison).

[11] There are not enough comparison schools with 0% having reached Level 2 to allow for a pure 'non-level 2' comparison group to be constructed.

3.7 The estimates of impact presented in Section 6 compare outcomes for the longitudinal respondents in Bikeability schools with the longitudinal respondents in the comparison schools *after* controlling (via logistic regression) for any differences between the two sets of pupils in terms of their baseline Year 5 responses. In addition, the study controlled for:

- the week in which the survey took place (in case the surveys in the two sets of schools were completed at different times during the Autumn term which could have affected pupils' propensity to cycle, or the interval between the start of the school year and the survey was different across the groups);
- whether or not the survey was completed in the week just after half-term, on the grounds that 'last week' cycling might be affected by this;
- school-level deprivation, using the percentage of Key Stage 2 pupils in receipt of free school meals;
- gender;
- whether or not the pupil had reached Level 1 by the time of the Year 5 survey.

3.8 Having controlled for these variables, any significant difference in the level of outcomes between the Bikeability and comparison schools can *reasonably* be attributed to a Bikeability impact.

3.9 Annex C includes information on the level of pre-existing differences between the Bikeability and comparison pupils. The pupils in the Bikeability and comparison schools are already reasonably well balanced in terms of the Year 5 pupil outcomes, with, for instance, 44 per cent of pupils from both groups having cycled in the last week. The two groups of schools are, however, fairly different in terms of their urban/rural profile and their free school meal profile, with the Bikeability schools being more likely to be rural and more likely to have low percentages of pupils on free school meals. Annex C also includes a description of sensitivity analysis to test whether the results are affected by the approach taken to control for any differences or by the profile of schools included per group.

Cross-sectional intention to treat analysis

3.10 In our exploration of **'intention to treat'** impacts we adopted a different approach that uses only cross-sectional data. For this analysis, pupils in Bikeability and comparison schools are compared *after* controlling for the contemporary Year 5 responses. It assumes that the Year 5 responses collected at the same time as the Year 6 responses give a reasonable 'pre-Bikeability' profile of cycling behaviours within the school.

3.11 The advantage of this analysis is that it makes use of far more of the data that was collected and includes many more schools and pupils in the analysis. A key disadvantage, however, is that it does not allow for sub-group analyses for sub-groups defined in terms of Year 5 variables (such as 'whether a cyclist' in Year 5). In practice, both approaches give very similar estimates of all-pupil impacts. Rather than include both in the report we have presented these alternative estimates in **Annex A.**

‘Impacts on the treated’

3.12 In addition, it is possible, albeit less robustly, to generate estimates of impacts just on the pupils who reach Level 2 Bikeability. This is akin to an **‘impact on the treated’** analysis. ‘Impact on the treated’ estimates are generally considered *less robust* for voluntary programmes because of the possibility of hidden self-selection effects that mean that any selected comparison group of pupils may not be genuinely comparable. For Bikeability, those pupils participating in Level 2 Bikeability might, for example, be the pupils who have actively decided they would like to cycle more. Without having a marker of this in the data, any comparison group of pupils we select may consist of pupils who are, on average, simply less interested in cycling. Nevertheless, we recognise that, from a policy perspective, having estimates of impact on those individuals who reach Level 2 is likely to be of value, so we have included them in **Annex B**. Overall, the ‘impacts on the treated’ are consistent with the ‘intention to treat ‘estimates so can be assumed reasonably unbiased.

P-values and statistical significance

3.13 Technical details for all of the analyses presented in the report are included in **Annex C**.

3.14 The tables in Sections 5 to 8 include the p-values from tests of statistical significance. P-values of less than 0.05 are marked with an asterisk (significant at the five per cent level); p-values of less than 0.01 are marked with two asterisks (significant at the one per cent level). All the tests take into account the hierarchical nature of the data, with pupils clustered within schools.

4. Outcome measures

4.1 The outcome measures included in the pupils' e-survey are designed to address each of the evaluation research questions posed by the DfT. The questions were cognitively tested with pupils to ensure both that they were age-appropriate and that they captured the intended underlying concepts. The analysis uses binary outcome measures, often derived from a longer response scale.[12]

4.2 Two reference periods are used for measuring the prevalence and frequency of cycling. '*In the last seven days'* is used to provide pupils with a recent time period, with the expectation that it will provide a relatively accurate response. '*Since the beginning of the school term*[13]' (an approximate two-month reference period) is used to ensure that the analysis incorporates less than weekly cycling, and avoids missing those who usually cycle weekly, but had not done so in the survey reference week. Indeed, more than half of the Year 6 respondents in the longitudinal sample reported that the previous week had been atypical (43 per cent stated they had cycled less in the previous week than usual, 29 per cent the same as usual, and 15 per cent more than usual, with 13 per cent responding 'Don't know' or 'prefer not to say'). In addition, 27 per cent completed the survey in the week just after the Autumn half-term holiday, so they were reporting on a holiday reference week rather than a term-time one. This has been controlled for in the analysis[14].

4.3 The core outcomes of interest identified by the Department of Transport are highlighted in bold in the list below. While we include the full list in the main table of overall impacts (Table 6-1), we concentrate our text on the core outcomes and include only the core set in our reporting of the impacts on different population sub-groups.

4.4 In more detail, the outcomes measuring the prevalence and frequency of cycling asked in the pupils' survey are:

- **Whether cycled in the past seven days *(binary outcome: cycled versus did not cycle)***
- Whether cycled relatively frequently in the past seven days *(binary outcome: cycled at least three days a week versus did not cycle at least three days a week)*
- **Whether cycled on roads in the past seven days *(binary outcome: cycled on roads versus did not cycle on roads)***

[12] For instance, when pupils were asked how often they had cycled in the past seven days, they were given a pre-coded response scale of 'I have not ridden a bicycle in the past 7 days; 1 or 2 days; 3 or 4 days; 5 or more days; I don't know/can't remember; Prefer not to say'. In our analysis, we have produced two binaries: cycled in past week versus not cycling; and cycled at least three days in the past week versus not doing so. The 'at least three' cut off was selected to distinguish between children cycling for around half the number of days in the week versus not. Where questions asked about cycling since the start of term, the response categories for those who cycled were: 1-2 days a month, 1-3 days a week or 4-7 days a week. As a result, we use the binary of cycling at least four days a week to indicate whether or not pupils are cycling around half the number of days in the week.

[13] As the surveys were conducted in Term 1, the questionnaire referred the start of the school year.

[14] In the regression-based estimates of impact, whether or not the survey was completed in the week after half-term was entered as a binary variable. The regression then balances the two groups on this binary variable.

- Whether cycled on roads relatively frequently in the past seven days *(binary outcome: cycled at least three days a week on roads versus did not cycle on roads at least three days a week)*
- **Whether cycled since the start of term *(binary outcome: cycled versus did not cycle)***
- Whether cycled relatively frequently since the start of term *(binary outcome: cycled at least four days a week versus did not cycle at least four days a week)*
- **Whether cycled on roads since the start of term *(binary outcome: cycled on roads versus did not cycle on roads)***
- Whether cycled on roads relatively frequently since the start of term *(binary outcome: cycled on roads at least four days a week versus did not cycle on roads at least four days a week)*
- **Whether cycled with adults or older siblings since the start of term *(binary outcome: cycled with others versus did not do so)***
- Whether cycled with adults or older siblings relatively frequently since the start of term *(binary outcome: cycled with others at least four days a week versus did not do so at least four days a week)*
- Usual mode of transport to school in the past seven days *(binary outcome: bicycle versus other mode)*

4.5 A second set of outcome measures concerns the potential impact of Bikeability on pupils' or parents' confidence:

- **Pupil confidence about cycling on roads (*binary outcomes: very confident or quite confident versus not very confident*; *very confident versus quite or not very confident*)**
- **Parental permission for their child to cycle on roads (*binary outcomes: allows versus does not allow*; *allows with adults or older siblings versus not*)**

4.6 Pupils' knowledge of road safety is measured with an example of something they should have learnt during the training:[15]

- **Where to look before putting a bike onto the road (*binary outcome: looking along the road behind for approaching traffic versus an incorrect answer*)**

4.7 Lastly, a question was included to test whether, in the eyes of pupils, Bikeability increased cycling among their cohort:

- Whether lots of children they know cycle (*binary outcomes: yes, know lots versus do not*)

[15] While the correct response remained constant across the 2017 and 2018 questionnaires, the precise question was changed in 2018, because pupils had been given the correct answer after completing the survey in Year 5.

5. Profile of those taking up Bikeability

Overview

5.1 When evaluating the effectiveness of a voluntary programme, a key question is who takes it up, and who does not. Knowing the profile of participants and non-participants helps not only in relation to the implementation of the programme (e.g. how it is promoted, etc.), but also in any assessment of how far the programme is reaching those who would benefit. Cross-referencing the profile of those who do and do not participate in the programme against the level of impact that it has for different population groups provides evidence on whether the programme is reaching all of those who would benefit.

5.2 This section provides a profile of Year 6 pupils who participated in Bikeability Levels 2 or 3 compared to those who did not. As we are interested in the voluntary decision of whether to take part in a Bikeability course – rather than other reasons for non-take up such as availability of the course in the school, or limited places on the course - we focus on the profile of pupils in schools where take-up of Bikeability Levels 2 or 3 is high (40 per cent of more) – in other words the 'Bikeability group' used for the impact analysis. While limited place availability or a pupil's unavailability at the time (e.g. sickness) may account for some of those not going on the course, we are assuming that, for many, it will be due to parents or children deciding not to participate. In the survey, we asked pupils whether they had received a Bikeability certificate (asking separately about Levels 1, 2 and 3). Because some schools give out certificates to all participants and others give them only to those who pass the assessment, we have taken receipt of a certificate as a measure of participation. (That said, national pass rates are above 90 per cent, so the clear majority of participants will have passed the course.)

5.3 We start below by comparing the profile of Year 6 pupils who participated in Bikeability Levels 2 or 3 with those who did not. We restricted our analysis to the longitudinal dataset, that is pupils who completed the survey *both* in the Autumn of 2017 (when they were in Year 5, prior to any Bikeability courses beyond Level 1) and in Autumn 2018. By doing so, we were able to compare the pre-Bikeability cycling behaviours and confidence across those who later did or did not receive a Level 2 or 3 Bikeability certificate. We also compared them by their gender, by cycling behaviour within their family in Year 5 and by information on the schools they attend. Regression analysis was used to predict the *independent* effect of pupil-level, family-level and school-level factors.

5.4 We found systematic differences in the profile of those who participated in Bikeability and those who did not, with those who cycled in Year 5 or who were more confident about cycling on roads being more likely to have received a Level 2 Bikeability certificate (i.e. participated in Bikeability), as were those with a working bike and those whose parents allowed them to cycle on roads. When we independently isolated the predictors of participating in Bikeability, all of these factors remained significant. In addition, living in a rural area was a significant predictor of receiving a Bikeability certificate.

Comparison of those who do and do not participate in Bikeability Levels 2 or 3

5.5 Table 5-1 shows the profile of Year 6 pupils who had and had not participated in Bikeability Levels 2 or 3 by Autumn 2018. We have looked at differences in take-up across different schools (school size, urbanicity and percentage free school meals), between pupils in households which are more or less pro-cycling (whether the child has a bike, whether other family members ride, whether parents allow their children to ride on roads), and between pupils with different cycling behaviours and confidence about cycling on roads early in Year 5 at the point of the first survey. For each potential explanatory variable, Table 5-1 shows the percentage of pupils participating and not participating in Bikeability, as well as whether the difference between them is statistically significant (see paragraph 3.14).

5.6 Table 5-1 shows a consistent picture of Year 6 pupils participating in Bikeability already being more likely to have an investment in cycling when they were in Year 5 and prior to taking the course. They were more likely to have a working bike in Year 5 (70 per cent versus 40 per cent of those not receiving a certificate). Their parents were more likely to allow them to cycle on roads (76 per cent versus 53 per cent) and they were more likely to be cyclists (e.g. 75 per cent of those receiving a Bikeability certificate had cycled since the start of term compared to 52 per cent of those not receiving one, with a consistent picture across all the cycling behaviour measures). Overall, such young people were more confident road cyclists (76 per cent versus 50 per cent were very or fairly confident in Year 5).

5.7 Pupils in schools with fewer than 400 pupils were more likely (75 per cent) than those in larger schools (59 per cent) to participate in Bikeability. It would be worth exploring whether this is due to course capacity, or a difference in school culture about expectations of going on the course.

Table 5-1: Profile of Year 6 pupils in high take-up schools participating in Bikeability Level 2 or 3

	Yes	No	p-value[16]
Were pupils participating in Bikeability Levels 2 or 3….	***%***	***%***	
Area/school level factors			
In a school with fewer than 400 pupils	75	59	0.11
In an urban school	64	72	0.36
In a school with fewer than 14% of KS2 pupils eligible for free school meals	65	74	0.36
Household/parent related factors			
A pupil with a bike that worked in Year 5	70	40	<0.01**
A pupil whose parents or older siblings cycled when they were in Year 5	70	58	0.19
A pupil whose parent allowed them to ride on roads (either alone/with friends or with adult) in Year 5	76	53	<0.01**
A pupil whose parent allowed them to ride on roads alone or with friends (i.e. without an adult) in Year 5	73	65	0.36

[16] P-values of less than 0.05 are marked with a single asterisk (significant at the 5% level), p-values of less than 0.01 are marked with two asterisks (significant at the 1% level)

	Yes	No	p-value[16]
Were pupils participating in Bikeability Levels 2 or 3….	*%*	*%*	
Pupil related factors			
Male	65	70	0.70
A pupil who cycled in last week in Year 5	75	60	0.01**
A pupil who cycled at least three days in last week in Year 5	75	62	0.03*
A pupil who cycled on roads in last week in Year 5	80	60	<0.01**
A pupil who cycled on roads at least three days in last week in Year 5	78	64	0.13*
A pupil who cycled since start of term in Year 5	75	52	<0.01**
A pupil who cycled at least four days a week since the start of term in Year 5	78	63	0.02*
A pupil who cycled on roads since the start of term in Year 5	78	59	<0.01**
A pupil who cycled on roads at least four days a week since the start of term in Year 5	81	64	0.02*
A pupil who cycled with adults or older siblings since the start of term in Year 5	73	61	0.02*
A pupil who cycled at least four days a week with adults or older siblings since the start of term in Year 5	82	64	0.02*
A pupil who knew lots of children of their age in Year 5 who cycled	68	59	0.19
A pupil who was very or fairly confident riding on roads in Year 5	76	50	<0.01**
A pupil who was very confident riding on roads in Year 5	78	61	0.02*
A pupil who knew where to look before getting on to road in Year 5	68	65	0.65
A pupil who rode a bike as their main mode of transport to school in Year 5	67	66	0.95
Sample size Year 6 pupils: 369			
Sample size schools: 19			
Bikeability level reached: % at level 1: 10%			
% at level 2: 63%			
% at level 3: 3%			

Source: BPSR analysis of SQW Bikeability Pupil E-survey

What predicts pupils participating in Bikeability Levels 2 or 3?

5.8 Given the correlation between several of the explanatory variables in Table 5-1, we ran regression analysis to isolate the *independent* association between various explanatory variables and participating in Bikeability in order to identify the strongest predictors.

5.9 Table 5-2 shows the results of a binary logistic regression model which included a range of the variables included in Table 5-1. In terms of cycling behaviour in Year 5, we concentrated on cycling since the start of term.[17] Binary logistic regression allows us to look at the *independent* association between participating in Bikeability and these other factors. The analysis identifies the independent association between cycling and each factor, whilst taking into account the level of association with all the other factors in the model. For instance, while

[17] Exploratory models used cycling in the past week, cycling on roads, cycling with others, as well as looking at more frequent cycling rather than a binary 'cycled or not'.

in Table 5-1, we found a statistically significant association between cycling and being confident cycling on roads, hypothetically this could be simply because more confident pupils are those who have a working bike. In other words, it could be that there is only an association between cycling and confidence because the confident pupils have a working bike. The regression analysis in Table 5-2 shows the independent association between pupil confidence about cycling on roads and cycling, between having a working bike and cycling, and so on (associations do not show causality nor direction). Sticking with the example, both having a working bike and being a confident road cyclist are independently associated with cycling in Year 5.

5.10 As in the descriptive analysis, having a working bike in the previous year and parents allowing their Year 5 children to cycle on roads are statistically significantly associated with participating in Bikeability, even when controlling for other factors, as is cycling and being confident cycling on roads in the previous year. The one factor which becomes significant when controlling for other factors (i.e. it was not showing as significant in the cross-tabular analysis in Table 5-1), is that pupils living in a rural, rather than urban, area were significantly more likely to participate in Bikeability.

Table 5-2: Predictors of participating in Bikeability Level 2 or 3 among Year 6 pupils in high take-up schools

	Odds ratio	P-value
Area/school level factors		
Number of pupils in school (low to high)	1.00	0.23
Urban school (ref rural)	0.34	0.01**
Percentage of KS2 pupils eligible for free school meals (low to high)	0.97	0.17
Household/parent related factors		
Pupil had a bike that worked in Year 5 (ref did not)	2.69	0.01**
Parents or older siblings cycled when pupil in Year 5 (ref did not)	0.97	0.90
Parent allowed pupil to ride on roads (alone/with friends or with adult) in Year 5 (ref did not)	2.50	0.01**
Pupil related factors		
Male (ref female)	0.79	0.19
Cycled since start of term in Year 5 (ref did not)	2.06	<0.01**
Knew lots of children of their age in Year 5 who cycled (ref did not)	1.21	0.54
Very or fairly confident riding on roads in Year 5 (ref was not)	2.68	<0.01**
Whether knew where to look before getting on to road in Year 5 (ref did not)	1.14	0.70
Sample size Year 6 pupils: 369		
Sample size schools: 19		
Bikeability level reached: % at level 1: 10%		
% at level 2: 63%		
% at level 3: 3%		

Source: BPSR analysis of SQW Bikeability Pupil E-survey

Summing up

5.11 Participating in Bikeability Level 2 or 3 training was significantly associated with children who reported, in the Autumn of 2017 when they were in Year 5, that they cycled regularly, and were confident road cycling. This suggests that **the Programme's reach would benefit from greater consideration of the need to promote cycling practice to non-cyclists and those who cycle less often, prior to children taking part in Bikeability.**

6. The impact of Bikeability Levels 2 and 3

Overview

6.1 This section includes our primary impact estimates of Bikeability, where all pupils in 'Bikeability' schools (i.e. in which at least 40 per cent of Year 6 pupils had participated in Bikeability Levels 2 or 3 by the Autumn term) are compared to all pupils in comparison schools. The analysis focuses on **the longitudinal sample of pupils** who completed the survey in both 2017 and 2018, when they were in Years 5 and 6 respectively. By comparing data from pupils in the Bikeability and comparison schools, we test whether cycling outcomes in Year 6 are related to the take-up of the programme by a school, after having controlled for any Year 5 differences. We also report on the impacts of Bikeability across different pupil sub-groups: by gender, by proportion of free school meal pupils in the school, and by their cycling patterns and road confidence in Year 5.

6.2 In summary, we find positive, and statistically significant, impacts associated with being offered at least Level 2 Bikeability on a range of pupil outcomes, including cycling rates since the start of term, whether pupils have cycled on the road in the past week, parents allowing their children to ride on roads and knowledge of how to ride on roads safely. The impacts appear greater among pupils in schools with a higher than average proportion of Key Stage 2 pupils eligible for free school meals. However, there is evidence of benefits for all the sub-groups of pupils studied.

Overall impacts

6.3 Table 6-1 shows the proportion of Year 6 pupils in Bikeability and comparison schools achieving each of the outcomes (with our core outcomes emboldened). A positive percentage point difference[18] indicates that a higher proportion of pupils in Bikeability schools achieved the outcome than those in the comparison schools, with the p-value indicating statistical significance. A single asterisk indicates significance at the five per cent level and a double asterisk indicates significance at the one per cent level.

6.4 **Bikeability positively impacts on Year 6 pupils' propensity to cycle.** Being offered Bikeability Levels 2 or 3 was statistically associated with a higher proportion of Year 6 pupils who reported that they cycled since the start of term. The proportion of Year 6 pupils in the Bikeability schools who cycled since the start of term was statistically significantly greater (65 per cent) than the proportion in comparison schools (56 per cent) – a ten percentage point difference.[19]

6.5 **In line with the focus of the Level 2 and 3 training, we find that Bikeability positively impacts on Year 6 pupils' propensity to cycle on roads.** Bikeability was significantly associated with the proportion of Year 6 pupils who cycled on roads in the past week (34 per cent compared with 22 per cent in the comparison schools).

[18] Where the percentage point difference is not a simple deduction of one whole percentage from the other, this is due to rounding, with the percentage point difference taking into account decimal places.
[19] Note that the difference is 10 percentage points, not nine, due to rounding.

6.6 **Linked to this, Bikeability has a positive impact on parents' preparedness to allow their Year 6 children to cycle on roads** (according to the pupils' reports). Pupils in Bikeability schools were significantly more likely (70 per cent compared to 58 per cent, a 12 percentage point difference) to say that their parents allowed them to ride on roads. (See Section 8 for more on parents' perceptions.)

6.7 **Moreover, Bikeability has a positive impact on Year 6 pupils' road safety knowledge.** Pupils in Bikeability schools are significantly more likely (22 per cent compared to seven per cent) to have answered the survey 'quiz' question correctly about where to look before getting on to a road at a junction. It is worth noting that only a small proportion of Year 6 pupils got this question right in 2018, even in the Bikeability schools, suggesting that ensuring longer-term learning may require both targeted reminders and regular practice in addition to initial training.

6.8 **However, this does not appear to translate into how Year 6 pupils rate their own confidence in road cycling,** as there is no apparent association between being offered Bikeability and pupils' confidence in cycling on roads[20],

Table 6-1: Intention to Treat: Regression-adjusted outcomes for Year 6 pupils, by group

	Pupils in Bikeability schools[21]	Pupils in comparison schools[22]	% point difference (impact)	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Cycled in last week	**45**	**37**	**8**	**0.05**
Cycled at least three days in last week	34	28	5	0.15
Cycled this term	**65**	**56**	**10**	**0.02***
Cycled at least three days a week this term	18	18	0	0.94
Cycled on roads in last week	**34**	**22**	**12**	**0.01****
Cycled on roads at least three days in last week	15	14	2	0.48
Cycled on roads this term	**46**	**40**	**7**	**0.08**
Cycled on roads at least four days a week this term	7	11	-4	0.04*
Cycled with adults or older siblings this term	**51**	**43**	**8**	**0.10**
Cycled at least four days a week with adults or older siblings this term	7	3	4	0.03*
Bike is main mode of transport to school	6	8	-1	0.38
Know lots of children of their age that cycle	86	79	7	0.11

[20] A previous study (https://www.nfer.ac.uk/media/1624/bike01.pdf) reported a statistically significant impact on cycling confidence. The difference in results may be due to differences in the follow-up period with the previous study collecting outcomes data a maximum of three months after the course. The current study collected data up to a year after training.

[21] At least 40% of Y6 participating in Bikeability Level 2 or 3.

[22] Fewer than 40% of Y6 participating in Bikeability Level 2 or 3.

	Pupils in Bikeability schools[21]	Pupils in comparison schools[22]	% point difference (impact)	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Very or fairly confident riding on roads	**73**	**69**	**3**	**0.54**
Very confident riding on roads	35	31	4	0.38
Parent allows pupil to ride on roads (alone/with friends or with adult)	**70**	**58**	**12**	**0.03***
Parent allows pupil to ride on roads alone or with friends	27	24	3	0.38
Whether know where to look before getting on to road	**22**	**7**	**15**	**<0.01****
Sample size Year 6 pupils	*369*	*315*		
Sample size schools	*19*	*12*		
Bikeability level reached: % at level 1	*11*	*10*		
% at level 2	*10*	*63*		
% at level 3	*3*	*3*		

Source: BPSR analysis of Bikeability Pupil E-survey

Impacts by subgroups

6.9 The apparent impacts of Bikeability are encouraging. It is therefore useful to look more closely at whether these impacts are observed relatively consistently across different groups of pupils, or whether the course has differential effects. An understanding of how the course may work for different groups of pupils could influence any future promotion or review of the course content. We have therefore looked at four sub-groups where, either we might expect to find differential impacts, or where it is important to be aware if there are differences.

6.10 We first divided schools into those with higher or lower proportions of Key Stage 2 (KS2) pupils eligible for free school meals. We choose this over the Index of Multiple Deprivation as a measure of deprivation, as it provides a more accurate measure of individual pupil disadvantage than the postcode of the school.[23] An analysis distinguishing between urban and rural schools had also been planned but we have insufficient data from rural schools in the low take-up comparison schools to do this.

6.11 We then looked at subgroups based on pupils' cycling behaviour and confidence cycling on roads in the Autumn term of Year 5, before those participating in Bikeability Levels 2 and 3 attended the course. We know that certification is correlated both with being a cyclist and being a confident road cyclist in Year 5. The question is whether this leads to differences in the impact of Bikeability on these pupils versus those with less experience. The hypothesis could go either way: those with experience could have less need, and therefore benefit less, from Bikeability. Conversely, their experience and confidence from the start could mean that they get more from the course than those starting from a lower base.

6.12 Lastly, we look separately at impacts for boys and girls.

[23] The two measures have a high correlation, so it is not useful to present both

6.13 The difference in impacts between the groups has been tested for significance using interaction terms in the logistic regression models. The p-values for the tests are included as the final column in Tables 6-2 to 6-5. It is important to note that the sample sizes in the sub-groups are small so the differences in impact have to be very large to reach statistical significance[24].

6.14 We find statistical evidence of differential impacts across the free school meals groups. Here, those in more deprived schools (measured by a higher proportion of free school meals) benefit more from Bikeability than those in more affluent schools. Beyond that, the data *suggests* the impacts of Bikeability may be higher on those with more prior cycling experience and confidence cycling on roads, rather than those with less but the difference does not reach statistical significance. There are no marked differences in impacts between boys and girls.

Impacts by the proportion of KS2 pupils in a school being eligible for free school meals

6.15 Table 6-2 splits the high and low take-up schools into those with a higher or lower than average percentage of pupils eligible for free school meals (below 14 per cent or 14 per cent and above[25]). We show the percentage of Year 6 pupils achieving each outcome, in Bikeability and comparison schools. We focus on the core outcomes highlighted in bold in Table 6-1.

6.16 Two key points emerge[26]:

- Within schools with a higher proportion of pupils eligible for free school meals, there were significantly greater impacts on pupil confidence and parents allowing their children to cycle on roads.
- The only outcome for which Bikeability has a greater impact on pupils in schools with a lower proportion of free school meal pupils was the knowledge question on where to look when putting their bike on the road.

[24] Note the tests are carried out within a logistic regression framework, so the test is of a difference in the odds ratios for the two groups rather than a test of a difference in the percentage point impacts.
[25] In January 2018, 13.6% of pupils were eligible for free school meals: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/719226/Schools_Pupils_and_their_Characteristics_2018_Main_Text.pdf.
[26] It is also interesting to note that Year 6 pupils in schools with a higher proportion of pupils on free school meals are, on average, less likely to cycle and less confident in doing so than pupils in schools with a lower proportion of pupils on free school meals.

Table 6-2: Intention to Treat: Regression-adjusted outcomes for Year 6 pupils, by proportion of Key Stage 2 pupils in school eligible for free school meals

	Schools with fewer than 14 per cent of KS2 pupils receiving free school meals		Schools with 14 per cent or more of KS2 pupils receiving free school meals		
	Pupils in Bikeability schools	**Pupils in comparison schools**	**Pupils in Bikeability schools**	**Pupils in comparison schools**	**p-value for differential impact**
	% of Y6 pupils	***% of Y6 pupils***	***% of Y6 pupils***	***% of Y6 pupils***	
Cycled in last week	50	42	42	36	0.86
Cycled this term	69	65	59	44	0.09
Cycled on roads in last week	36	30	34	20	0.18
Cycled on roads this term	49	48	46	33	0.11
Cycled with adults or older siblings this term	56	48	48	36	0.59
Very or fairly confident riding on roads	75	79	75	60	0.02*
Parent allows pupil to ride on roads	73	67	74	43	0.01**
Whether know where to look before getting on to road	28	4	20	11	0.02*
Sample size Year 6 pupils	*191*	*136*	*100*	*179*	
Sample size schools	*11*	*5*	*5*	*8*	
Bikeability level reached: % at level 1	*7*	*15*	*16*	*8*	
% at level 2	*64*	*6*	*67*	*13*	
% at level 3	*1*	*3*	*7*	*3*	

Source: BPSR analysis of Bikeability Pupil E-survey

Impacts by cycling behaviour and confidence in cycling on roads in Year 5

6.17 Given we know that pupils who cycled or felt confident cycling prior to Bikeability (i.e. the Year 5 baseline measures reported in Section 4) are more likely to take up Bikeability, it is feasible that the impact of being offered Bikeability Levels 2 or 3 differs according to pupils' prior experience. Tables 6-3 and 6-4, therefore, split pupils into whether or not they had cycled since the start of term in Year 5, and according to their level of confidence cycling on roads recorded in Year 5.

6.18 The key points to note from the tables are:

- Cycling rates in Year 6 are highly correlated with cycling rates in Year 5. For example, for pupils in comparison schools, 70 per cent of those who cycled at least one or two days a month at Year 5 had cycled in the last week at the time of the Year 6 survey. This compares to just 38 per cent for those who did not cycle so frequently in Year 5.
- Nevertheless, there is no statistical evidence of *differential* impacts by frequency of cycling in Year 5. Bikeability is effective both for those who were cyclists in Year 5 and those who were not.
- Furthermore, as with cycling frequency in Year 5, there is no statistical evidence of *differential* impacts by level of road confidence in Year 5 (Table 6-4).

Table 6-3: Intention to Treat: Regression-adjusted outcomes for Year 6 pupils, by whether pupil cycled in Year 5

	Cycled at least one or two days a month at Year 5 baseline		Did not cycle or cycled less than one or two days a month at Year 5 baseline		
	Pupils in Bikeability schools	**Pupils in comparison schools**	**Pupils in Bikeability schools**	**Pupils in comparison schools**	**p-value for differential impact**
	% of Y6 pupils	***% of Y6 pupils***	***% of Y6 pupils***	***% of Y6 pupils***	
Cycled in last week	61	48	21	22	0.17
Cycled this term	76	70	47	38	0.77
Cycled on roads in last week	46	34	16	11	0.96
Cycled on roads this term	58	53	26	23	0.99
Cycled with adults or older siblings this term	60	60	37	22	0.06
Very or fairly confident riding on roads	85	82	54	52	0.76
Parent allows pupil to ride on roads	79	68	47	45	0.26
Whether know where to look before getting on to road	24	7	16	8	0.15
Sample size Year 6 pupils	*200*	*161*	*110*	*108*	
Sample size schools	*19*	*12*	*18*	*12*	
Bikeability level reached: % at level 1	*7*	*10*	*15*	*9*	
% at level 2	*70*	*14*	*47*	*5*	
% at level 3	*5*	*4*	*1*	*2*	

Source: BPSR analysis of Bikeability Pupil E-survey

Table 6-4: Intention to Treat: Regression-adjusted outcomes for Year 6 pupils, by whether pupil confident cycling on roads in Year 5

	Very or fairly confident cycling at Year 5 baseline		Not very or fairly confident at cycling at Year 5 baseline		
	Pupils in Bikeability schools	**Pupils in comparison schools**	**Pupils in Bikeability schools**	**Pupils in comparison schools**	**p-value for differential impact**
	% of Y6 pupils	***% of Y6 pupils***	***% of Y6 pupils***	***% of Y6 pupils***	
Cycled in last week	56	42	27	29	0.12
Cycled this term	70	61	59	48	0.91
Cycled on roads in last week	42	29	21	14	0.80
Cycled on roads this term	55	45	32	33	0.36
Cycled with adults or older siblings this term	62	50	33	30	0.36
Very or fairly confident riding on roads	86	85	51	47	0.82
Parent allows pupil to ride on roads	81	68	52	44	0.40
Whether know where to look before getting on to road	24	6	21	8	0.39
Sample size Year 6 pupils	*231*	*211*	*117*	*87*	
Sample size schools	*19*	*12*	*18*	*12*	
Bikeability level reached: % at level 1	*7*	*12*	*12*	*9*	
% at level 2	*73*	*12*	*49*	*5*	
% at level 3	*4*	*3*	*3*	*2*	

Source: BPSR analysis of Bikeability Pupil E-survey

Impacts by gender

6.19 Finally, as with cycling frequency and road confidence, there was no evidence of differential impacts by gender (Table 6-5). Both boys and girls appear to benefit from the training.

Table 6-5: Intention to Treat: Regression-adjusted outcomes for Year 6 pupils, by gender

	Boys		Girls		
	In Bikeability schools	In comparison schools	In Bikeability schools	In comparison schools	p-value for differential impact
	% of Y6 boys	*% of Y6 boys*	*% of Y6 girls*	*% of Y6 girls*	
Cycled in last week	49	40	41	34	0.93
Cycled this term	63	57	68	54	0.24
Cycled on roads in last week	37	25	30	19	0.91
Cycled on roads this term	48	41	44	38	0.98
Cycled with adults or older siblings this term	53	38	49	48	0.08
Very or fairly confident riding on roads	77	73	67	67	0.59
Parent allows pupil to ride on roads	71	58	68	58	0.74
Whether know where to look before getting on to road	21	7	23	7	0.84
Sample size Year 6 pupils	*190*	*156*	*178*	*159*	
Sample size schools	*19*	*12*	*19*	*12*	
Bikeability level reached: % at level 1	*11*	*14*	*8*	*9*	
% at level 2	*62*	*11*	*64*	*9*	
% at level 3	*3*	*3*	*3*	*3*	

Source: BPSR analysis of Bikeability Pupil E-survey

Summing up

6.20 Bikeability appears to be achieving its aims in increasing cycling rates and improving children's safety when cycling on roads. We found positive, and statistically significant, impacts associated with participating in at least Level 2 Bikeability training on a range of Year 6 pupil outcomes, including cycling rates since the start of term, whether pupils have cycled on the road in the past week, whether parents allow their children to ride on roads and pupils' knowledge of how to ride on roads safely. While there is no significant impact of Bikeability on pupils' confidence in cycling on roads, Bikeability increases the propensity for parents to allow their children to ride on roads. This implies that Bikeability positively impacts on parents' confidence in their children's cycling skills and road safety. Pupils in Bikeability schools were significantly more likely to have answered a survey 'quiz' question correctly about where to look before getting on to a road at a junction.

6.21 Within schools with a higher proportion of pupils eligible for free school meals, there were significantly greater impacts on pupil confidence and parents allowing their children to cycle on roads. There is no strong evidence of the impacts being greater among those who were cycling, or more confident about cycling, in the Autumn term of Year 5, or by gender.

7. Parents' perceptions of Bikeability

Overview

7.1 This section focuses on the perceptions of parents and guardians of Year 6 pupils, collected in e-surveys conducted in Autumn 2017 and Autumn 2018.[27] For brevity, parents and guardians are referred to as parents in this chapter. In total, 1,430 parents of children attending 184 different schools completed the e-survey, including 936 who responded in 2017 as part of the baseline recruitment phase and 494 who responded in 2018 as part of the recruitment process for the follow-up survey. Broken down differently, 795 responses were from a parent of a Year 5 pupil and 620 were from a parent of a Year 6 pupil (15 did not identify the year group of their child).

Parent perceptions of Bikeability

7.2 Table 7-1 shows how parents of Year 6 pupils who had received a Bikeability certificate responded to five statements designed to capture the perceptions of parents about Bikeability. For each statement, parents were asked to what extent they agreed or disagreed with the statement, using a five-point scale. While parents were asked what Bikeability Level certificate their child had received, 31 per cent did not know. Table 7-1 therefore reports on the views of parents whose children had received Level 1 (15 per cent), Levels 2 or 3[28] certification (54 per cent) and those who did not know the Level.

7.3 Across the five statements, the one receiving the highest proportion of agreement concerned their child's cycling skills and confidence having improved since the training, with 86 per cent of parents agreeing (measured here, and elsewhere as 'agreeing strongly' or 'agreeing'). The other statement to which the majority of parents agreed focused on parents' willingness to let their children cycle on the road since they did the training, with 56 per cent agreeing.

7.4 Parents' perceptions were more mixed when it came to whether their children cycled more, or cycled more independently, since going on the training. For instance, 37 per cent of parents agreed that their children cycle more often since doing the training, 40 per cent neither agreed nor disagreed, and 21 per cent disagreed. Similarly, 44 per cent agreed that their child cycled more independently since the training, while 28 per cent neither agreed nor disagreed and 25 per cent disagreed.

7.5 The area where parents were least likely to perceive change as a result of the training was in relation to cycling to school, where only 16 per cent of parents agreed that was the case and 55 per cent disagreed. A number of external factors (including parental travel to work patterns, or lack of facilities for secure cycle parking in schools) may help to explain parents' responses to this question.

[27] In addition to the findings reported here, the original intention had been to measure the impact of Bikeability on both parents' and pupils' cycling behaviour and confidence (as reported by parents). However, we have not included these analyses in the report due to methodological concerns around possible bias in the profile of parents who have responded and the available control variables. See Appendix B for more details.
[28] Only 23 parents reported their child having achieved Level 3.

7.6 Across the five statements, parents whose children had participated in Bikeability Levels 2 and 3 were more positive about the effects of Bikeability than those whose children had participated only in Level 1, with the most marked differences related to confidence in riding on roads.

Table 7-1: Parents' perceptions on the effect of Bikeability on their children's cycling, by Bikeability level

	Level 1	Levels 2 or 3	Don't know which level	All levels
	% parents	*% parents*	*% parents*	*% parents*
"My child's cycling skills and confidence have improved since the training"				
Agree strongly	25	38	23	31
Agree	46	57	56	55
Neither agree nor disagree	21	5	11	9
Disagree	2	1	3	2
Disagree strongly	4	0	0	1
Don't know	2	0	7	2
"My child rides a bicycle more often since the training"				
Agree strongly	11	15	7	12
Agree	23	27	23	25
Neither agree nor disagree	34	41	42	40
Disagree	23	17	22	19
Disagree strongly	7	0	3	2
Don't know	2	0	3	1
"My child rides a bicycle more independently (alone or with their friends) since the training"				
Agree strongly	4	13	8	10
Agree	29	38	30	34
Neither agree nor disagree	34	25	30	28
Disagree	25	21	23	22
Disagree strongly	7	3	2	3
Don't know	2	0	5	2
"My child cycles more often to school since the training"				
Agree strongly	2	10	3	6
Agree	9	13	7	10
Neither agree nor disagree	39	24	23	26
Disagree	30	40	43	39
Disagree strongly	18	13	20	16
Don't know	2	2	3	2

	Level 1	Levels 2 or 3	Don't know which level	All levels
	% parents	*% parents*	*% parents*	*% parents*
"I am more willing to allow my child to cycle on the road since the training"				
Agree strongly	13	14	3	11
Agree	25	54	40	45
Neither agree nor disagree	29	15	30	22
Disagree	23	13	16	15
Disagree strongly	9	4	8	6
Don't know	2	1	3	1
Base: Parents of Year 6 pupils who have received a Bikeability certificate	*56*	*199*	*115*	*370*

Source: BPSR analysis of Bikeability Parent E-survey 2017 and 2018

Whether offered Bikeability, reasons for not doing so and likelihood of taking up Bikeability if offered

7.7 Among those parents whose child had not received a Bikeability certificate (of any level), a third (34 per cent) reported their child had been offered the training in the current or previous school year (Table 7-2). Encouragingly, when asked why their child had not done the training, the most common response (38 per cent) was that the course had not yet run. Another factor outside of the control of the parent or child was course capacity: six per cent reported that there was not enough room on the course.[29]

7.8 The proportions who actively chose not to take up the offer of the course were relatively small: 16 per cent reported that their child did not want to do the course, or did not ride a bike and three per cent said that they did not want their child to do the training, or had concerns over safety.

7.9 Almost all (98 per cent) of those parents whose children had not been offered Bikeability training said that they would accept an offer if it was made in the next month.

[29] This is only among those who say they were offered Bikeability. Those not offered Bikeability may be due to capacity constraints.

Table 7-2: Whether offered Bikeability, reasons for non-take-up and likelihood of taking it up

	% parents
% offered Bikeability in this or last school year	34
Base: parents whose Year 6 children do not have a Bikeability certificate	*250*
Reasons for child not having done Bikeability when offered	
Course not run yet	38
Child did not want to do the course/does not ride a bike	16
Wrong timing	14
Done Bikeability elsewhere/been taught by parents/already confident	7
Not enough room on course	6
Parent didn't want child do/had safety concerns	3
Other	5
Base: parents whose Year 6 had been offered Bikeability	*87*
% of those not offered Bikeability who would take it up if offered in the next month	98
Base: parents whose Year 6 children do not have a Bikeability certificate and not offered Bikeability	*163*

Source: BPSR analysis of Bikeability Parent E-survey

Summing up

7.10 In Section 6, we reported on the statistically significant positive impacts on a range of Year 6 outcomes of being offered Bikeability, including cycling rates since the start of term, whether pupils had cycled on the road in the past week, whether parents allowed their children to ride on roads and pupils' knowledge of how to ride on roads safely. Alongside these, the majority of parents whose Year 6 children had a Bikeability certificate were positive about its effects, particularly in relation to improvements in their children's cycling skills and confidence and in their willingness to let their children cycle on roads. Among parents whose children did not yet have a Bikeability certificate, almost all said that they would take up the offer of their children attending a Bikeability course if it was offered in the next month.

8. Summary and conclusions

8.1 Our evaluation has demonstrated the positive impacts of Bikeability across a range of Year 6 outcomes related to cycling behaviour and skills and confidence related to cycling on roads. In particular, being offered Bikeability Level 2 or 3 is positively, and statistically significantly, associated with an increased propensity among Year 6 pupils to have cycled since the start of term), with higher levels of road cycling in the past week and with their knowledge of how to ride on roads safely.

8.2 Bikeability also increases the propensity for parents to allow their children to ride on roads, which implies that Bikeability positively impacts on parents' confidence in their children's cycling skills and road safety. This is corroborated by parents' positive reports of Bikeability, with substantial proportions reporting that their children are more confident in their cycling abilities and cycle more often. Nearly all parents whose children had not been offered Bikeability would take up an offer of training if given.

8.3 There is evidence of benefits for all the sub-groups of pupils studied. However, the impacts appear greater among pupils in schools with a higher than average proportion of Key Stage 2 pupils eligible for free school meals.

8.4 Given the positive impacts of Bikeability, it would be worth considering how to increase the uptake of Bikeability among those with lower levels of road cycling confidence and those less likely to cycle. Those who are less confident or who cycle less frequently in the Autumn of Year 5 are currently less likely than others to have achieved Bikeability certification by the Autumn of Year 6.

Annex A: Cross-sectional Intention to Treat analysis

A.1 The intention-to-treat analysis reported in Section 6 is based on longitudinal data from pupils for whom we have both Year 5 baseline outcomes and Year 6 outcomes. The ability to control for a pupil's *individual* baseline outcomes gives more confidence that the differences observed between pupils in the Bikeability and comparison schools are due to the Programme rather than other non-Bikeability factors which differentiate the two groups. The findings in Section 6 are our main estimates of impact.

A.2 There is an alternative way to generate intention to treat estimates of impact using cross-sectional data rather than longitudinal data and making use of the fact that Year 5 and Year 6 pupils are surveyed in parallel each year. In this analysis, when comparing Bikeability and comparison schools on Year 6 outcomes, differences between the two groups of schools are controlled for using the *aggregate* Year 5 school-level scores collected at the same point in time. This analysis can pool data collected in 2017 and 2018 and gives a much larger sample size than the analysis reported on in Section 6.

A.3 As with the main intention to treat analysis in Section 6, this analysis is based on a subset of the schools, namely those completing the survey with both Year 5 and Year 6 and where no Year 5 pupils reported having reached Level 2 or 3, and fewer than 10 per cent reported having reached Level 1 (so that the Year 5 data gives a 'without Bikeability' profile of cycling for the school). Again, as with the other analysis, we measure the impact of Bikeability Levels 2 and 3. Details are given in Annex C.

A.4 Table A-1 shows the proportion of Year 6 pupils in Bikeability and comparison schools achieving each of the outcomes, using this cross-sectional approach. As with the earlier tables, the positive percentage point difference indicates that a higher proportion of pupils in Bikeability schools achieved the outcome than those in the comparison schools, with the p-value indicating statistical significance. A single asterisk indicates significance at the five per cent level and a double asterisk indicates significance at the one per cent level.

A.5 The overall pattern of results is very similar to those reported in Table 5-1. The percentage point differences are very similar (more often a little higher than in Table 5-1). However, importantly, the larger sample size brings into statistical significance a number of the percentage point differences which were not evident in the main analysis based on the smaller longitudinal data sample.

A.6 In Section 6, we reported Bikeability having a statistically significant positive impact on: cycling on roads in the past week; cycling since the start of term; parents allowing pupils to cycle on roads; and a correct response to the road safety question. All of these remain significant in the cross-sectional impact analysis in Table A-1. However, in addition, we see statistically significant impacts on cycling in the past week; cycling on roads since the start of term; cycling with adults or older siblings since the start of term; and knowing other children who cycle. Any impact on pupils' cycling confidence remains non-significant.

A.7 Our conclusion remains the same - that Bikeability has a positive impact on the cycling behaviours of Year 6 pupils. Although we do not see significant impacts on our 'confidence' outcome measures, the positive impact on children's road cycling, on their knowledge of road safety and, importantly, on parents allowing their children to ride on the road all suggest that Bikeability has a positive impact on pupils' ability to ride safely on roads.

Table A-1: Cross-sectional Intention to Treat analysis: Regression-adjusted outcomes for Year 6 pupils, by group

	Pupils in Bikeability schools (at least 40% of Y6 participating in Bikeability Level 2 or 3)	Pupils in comparison schools (fewer than 40% of Y6 participating in Bikeability Level 2 or 3)	Percentage point difference	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Cycled in last week	**46**	**38**	**8**	**0.02***
Cycled at least three days in last week	33	26	8	0.01**
Cycled this term	**71**	**58**	**13**	**<0.01****
Cycled at least four days a week this term	18	19	-1	0.79
Cycled on roads in last week	**35**	**23**	**12**	**<0.01****
Cycled on roads at least three days in last week	18	13	4	0.06
Cycled on roads this term	**51**	**37**	**14**	**<0.01****
Cycled on roads at least four days a week this term	9	8	1	0.51
Cycled with adults or older siblings this term	**49**	**41**	**9**	**<0.01****
Cycled at least four days a week with adults or older siblings this term	6	7	-1	0.46
Bike is main mode of transport to school	7	7	-1	0.63
Know lots of children of their age that cycle	87	82	5	0.03*
Very or fairly confident riding on roads	**73**	**68**	**4**	**0.06**
Very confident riding on roads	33	29	4	0.07

	Pupils in Bikeability schools (at least 40% of Y6 participating in Bikeability Level 2 or 3)	Pupils in comparison schools (fewer than 40% of Y6 participating in Bikeability Level 2 or 3)	Percentage point difference	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Parent allows pupil to ride on roads (alone/with friends or with adult)	**71**	**64**	**7**	**0.01****
Parent allows pupil to ride on roads alone or with friends	30	25	5	0.11
Whether know where to look before getting on to road	**42**	**24**	**18**	**<0.01****
Sample size Year 6 pupils	1237	1123		
Sample size schools	*27*	*38*		
Bikeability level reached: % at level 1	*8*	*7*		
% at level 2	*64*	*7*		
% at level 3	*2*	*2*		

Source: BPSR analysis of SQW Bikeability Pupil E-survey

Annex B: Impact of Bikeability among those participating in Levels 2 or 3 ('Impact on the Treated')

B.1 The analysis presented in Section 6 measured the impact of Bikeability on the cycling behaviours and confidence across all Year 6 pupils in Bikeability schools (an intention to treat style analysis). Essentially, by defining the Bikeability schools as those where Year 5 take-up of Bikeability is 40 per cent or more, we have measured the overall impact on pupils in schools when pupils are given the option of taking a Bikeability course in Year 5.

B.2 This intention to treat approach is the purest way of measuring the impact of Bikeability, as it reduces the risk of self-selection bias, where pupils who choose to take Bikeability are systematically different to those who do not in ways that are unobservable in the data. In other words, by comparing whole year groups, including pupils who would or would not choose to participate in Bikeability, we can be more confident that the Bikeability group and comparison groups are similar, in a way that is not as easy to do if we want to compare those who *choose* to take up Bikeability in Bikeability schools against pupils in the comparison group. However, given the potential interest in the impact of Bikeability *specifically* on those participating in the course, in this Annex we report on an analysis which attempts to compare these Year 6 pupils to similar Year 6 pupils from the comparison schools, who have not yet participated in Bikeability though may do so later in the academic year.

B.3 There are a greater number of significant results when we focus only on those participating in Bikeability to Level 2 rather than the whole cohort and the impacts are systematically larger than the 'intention to treat' estimates (by a factor of about two), but this is consistent with what we would expect[30].

B.4 From Table B-1 we can see that Level 2 or 3 Bikeability has a positive impact on pupils' propensity to cycle, whether measured in the past seven days or since the start of the term. There is a 17 percentage point difference in cycling both in the past week (53 per cent versus 36 per cent) and since the start of term (72 per cent and 55 per cent) between those participating in Bikeability Levels 2 and 3 and their comparators.

B.5 There is also an impact on road cycling, again when looking both at cycling in the past week and since the start of term. There is a 20 percentage point impact (41 per cent versus 21 per cent) on road cycling in the past week and 18 percentage points (56 per cent versus 38 per cent) when focusing on the period since the start of term. There is a similar sized impact on cycling with adults or older siblings since the start of term.

[30] Intention to treat impacts tend to be smaller than impacts on the treated because the former include non-takers where we would expect the impact either to be zero or close to zero. If we make the assumption that the impact on those not reaching Level 2 is zero, then we would expect impacts on the treated to be close to double those of the intention to treat estimates of impact. The calculation is as follows: from the intention to treat analysis Bikeability school outcomes=0.66(x+I)+0.34x (where 0.66 is the average Level 2 rate) and comparison group outcomes=0.13(x+I)+0.87x. Here x=mean outcome without Bikeability, I=impact on the treated. The intention to treat (ITT) estimate of impact= 0.66(x+I)+0.34x-(0.13(x+I)+0.87x)=0.53I. So impacts on the treated should equal ITT impacts divided by 0.53 if (and only if) impact on non-takers is zero.

B.6 Unlike in the intention to treat analysis in Section 6, we find **statistically significant impacts on pupils' confidence in cycling on roads** when we focus our comparison on those participating in Bikeability Levels 2 or 3 and those who do not. Eighty-five per cent of those participating in Bikeability Levels 2 or 3 report being confident compared to 71 per cent for the comparators who are yet to do this. Likewise, according to the pupils' responses, parents of pupils who have participated in Bikeability are more likely to allow their children to cycle on roads (parental consent was reported by 81 per cent of pupils in the Bikeability schools versus 57 per cent of pupils in the comparison group).

Table B-1: Impact on the Treated: Regression-adjusted outcomes for Year 6 pupils, by group

	Y6 pupils participating in Bikeability Level 2 or 3 in Bikeability schools	Y6 pupils not participating in Bikeability Level 2 or 3 within comparison schools	Percentage point difference	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Cycled in last week	**53**	**36**	**17**	**<0.01****
Cycled at least three days in last week	38	27	11	0.01**
Cycled this term	**72**	**55**	**17**	**<0.01****
Cycled at least four days a week this term	21	17	4	0.32
Cycled on roads in last week	**41**	**21**	**20**	**<0.01****
Cycled on roads at least three days in last week	18	12	6	0.04*
Cycled on roads this term	**56**	**38**	**18**	**<0.01****
Cycled on roads at least four days a week this term	9	10	-1	0.58
Cycled with adults or older siblings this term	**59**	**42**	**17**	**<0.01****
Cycled at least four days a week with adults or older siblings this term	9	3	5	<0.01**
Bike is main mode of transport to school	9	8	1	0.82
Know lots of children of their age that cycle	87	80	7	0.07
Very or fairly confident riding on roads	**85**	**71**	**14**	**0.01****
Very confident riding on roads	44	32	12	0.01**
Parent allows pupil to ride on roads (alone/with friends or with adult)	**81**	**57**	**24**	**<0.01****
Parent allows pupil to ride on roads alone or with friends	32	22	9	0.02*
Whether know where to look before getting on to road	**27**	**6**	**21**	**<0.01****

	Y6 pupils participating in Bikeability Level 2 or 3 in Bikeability schools	Y6 pupils not participating in Bikeability Level 2 or 3 within comparison schools	Percentage point difference	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Sample size Year 6 pupils	*244*	*274*		
Sample size schools	*18*	*13*		
Bikeability level reached: % at level 1	*0*	*13*		
% at level 2	*95*	*0*		
% at level 3	*5*	*0*		

Source: BPSR analysis of Bikeability Pupil E-survey

Annex C: Technical descriptions of the analyses

C.1 The estimates of impact presented in Sections 6 and Appendices A and B are all based on a comparison of pupil outcomes between two groups of schools: 'Bikeability' schools where, according to the reports of the Year 6 pupils, at least 40 per cent had participated in Level 2 training before the survey, and 'comparison' schools where the percentage reporting participation was less than 40 per cent at the time of the survey. There are too few schools where no pupils reported being trained at Level 2 to allow for a comparison group in which no Bikeability training had yet taken place.

C.2 Cross-tabulation of pupil outcomes between the two groups of schools identifies statistical differences (Table C-1), but to isolate the Bikeability effect from other differences between the schools (such as pre-existing levels of pupils' cycling history or confidence) all other observed differences have to be controlled for as far as possible. As Table C-1 shows, the pupils in the Bikeability and comparison schools are already reasonably well balanced in terms of the Year 5 pupil outcomes, but the schools are unbalanced in terms or the urban/rural profile and in relation to the FSM profile (a measure of disadvantage). In fact, there are no rural schools in the comparison group so urban/rural locations cannot be controlled for (see sensitivity analysis below). For variables where it is possible to control for the differences, we have used hierarchical logistic regression, which enables us to look at each binary outcome in turn (e.g. confident/not confident in cycling on roads), control for the observed differences, and taken into account the multi-level structure of the data (i.e. pupils within schools).

C.3 The estimates of impact presented are based on these logistic regressions. The regressions were run in the SPSS complex samples module. The exact details of the models vary depending on whether the analysis is based on the longitudinal data (Section 6 and Annex B) or on cross-sectional data (Annex A).

C.4 The first two columns of percentages shown in the impact tables (e.g. Table 6-1) which show the percentages of pupils with particular outcomes for the Bikeability group (first column) and comparison group (second column), derive from odds ratios calculated as part of the logistic regressions.[31] The percentages for the Bikeability group are based on the raw data. The percentages for the comparison groups are calculated from the odds ratio. For example, the percentage of Year 6 pupils having cycled on roads in the last week in the Bikeability group is 33.9%, which in odds terms is 33.9/(100-33.9)=0.51. The odds ratio derived from the logistic regression is 0.55, so the odds for the comparison group is estimated as 0.51*0.55=0.28. The percentage equivalent to an odds of 0.28 is 21.9% (that is 21.9/(100-21.9)=0.28), so that is the regression-adjusted estimate for the comparison group. The interpretation of the regression-adjusted comparison group percentage is that it is the *expected* percentage if the comparison group shared the same characteristics as the Bikeability group.

[31] The odds that an outcome would occur given exposure to Bikeability training, compared to the odds of the outcome occurring in the absence of that exposure.

Table C-1: Profile of pupils and schools in the longitudinal analysis prior to regression analysis

	Bikeability schools	Comparison schools
Year 5, baseline, outcomes	***% of pupils***	***% of pupils***
Cycled in last week	44	44
Cycled at least three days in last week	31	29
Cycled this term	61	57
Cycled at least four days a week this term	21	22
Cycled on roads in last week	29	30
Cycled on roads at least three days in last week	14	17
Cycled on roads this term	40	37
Cycled on roads at least four days a week this term	12	10
Cycled with adults or older siblings this term	44	39
Cycled at least four days a week with adults or older siblings this term	11	10
Bike is main mode of transport to school	6	6
Know lots of children of their age that cycle	82	82
Very or fairly confident riding on roads	63	67
Very confident riding on roads	32	37
Parent allows pupil to ride on roads (alone/with friends or with adult)	58	58
Parent allows pupil to ride on roads alone or with friends	18	20
Whether know where to look before getting on to road	24	25
School-level characteristics		
Rural	27	0
FSM % greater than equal to 20%	12	38
Sample size pupils	*369*	*315*
Sample size schools *Sample size of schools*	*19*	*13*

Source: BPSR analysis of SQW Bikeability Pupil E-survey

Comparison of those with longitudinal records with other pupils from the same school

C.5 The analyses of impact that are based on the longitudinal pupil survey data have, as an implicit assumption, that those for whom a longitudinal record could be constructed are an unbiased subset of all pupils from the same year group in the same school. To test this assumption the Year 5 (baseline) and Year 6 outcomes for the longitudinal set of pupils were compared to the outcomes for others in the same schools from the same year group (Table C-2). Overall, there are very few significant differences between the longitudinal and non-longitudinal pupils from within the same schools, so the assumption of unbiasedness seems reasonable.

Table C-2: Comparison of outcomes for pupils with and without longitudinal data from the same schools

	Year 5 pupils (surveyed in 2017)			Year 6 pupils (surveyed in 2018)		
	Longitudinal dataset	Other pupils in same schools	p-value for difference	Longitudinal dataset	Other pupils in same schools	p-value for difference
	%	*%*		*%*	*%*	
Bike is main mode of transport to school	6	8	0.33	7	5	0.20
Cycled in last week	47	46	0.83	43	40	0.32
Cycled on roads in last week	32	29	0.23	30	28	0.26
Cycled this term	61	64	0.39	62	62	0.95
Cycled on roads this term	41	40	0.73	45	43	0.61
Cycled with adults or older siblings this term	44	45	0.65	48	43	0.08
Very or fairly confident riding on roads	67	65	0.58	72	66	0.02*
Parent allows pupil to ride on roads (alone/with friends or with adult)	59	59	0.99	65	64	0.48
Parent allows pupil to ride on roads alone or with friends	19	19	0.78	27	27	0.80
Sample size	*748*	*643*		*750*	*591*	

Source: BPSR analysis of SQW Bikeability Pupil E-surveys

Analysis of impact based on the longitudinal data

C.6 For the 'intention to treat' analysis of Section 6, the independent variables per Year 6 binary outcome were

- Group (Bikeability, Comparison) entered as a categorical variable

and the following control variables:

- The week number in which the survey was completed (entered as a continuous variable)
- Whether the survey took place in the week just after half term
- Whether the free school meal percentage for the school was at least 20% (the average entitlement in primary schools in England in 2018 was 13.7%, so schools with 20% and over of eligible pupils would be amongst the most disadvantaged)[32]
- The full set of Year 5 outcomes (e.g. whether cycled in the last week, whether confident cycling on roads, and so on)
- Gender
- Whether or not had reached Level 1 by the time of the Year 5 survey.

C.7 For each outcome, all the potential control variables were initially included, but then the model was re-run just with the Year 5 equivalent outcome and with any others that were significant at the 10% level. This was on the grounds that a more minimalist model, controlling only for the variables that are predictive of the outcome and hence ought to be controlled for, would yield a more stable estimate of impact.

Analysis of 'impacts on the treated' based on the longitudinal data

C.8 For the 'impacts on the treated' estimates of Section 7, the same logistic regression models were run as for Section 6, but here the 'group' variable was divided into four:

1. Pupils having participated to Level 2 in 'Bikeability' schools. This is the 'treated' group.
2. Pupils not having participated Level 2 in Bikeability schools;
3. Pupils having participated to Level 2 in comparison schools;
4. Pupils not having participated to Level 2 in comparison schools. This is the 'comparison group.

C.9 This four-way group variable was entered as a categorical independent variable, with the first group as the reference group. The odds ratio between the first and fourth groups yields the estimates of impact for the 'impact on the treated'.

[32] See https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/719226/Schools_Pupils_and_their_Characteristics_2018_Main_Text.pdf

Analysis of impacts based on the cross-sectional data

C.10 The 'intention to treat' analysis of Appendix A uses the cross-sectional data per survey year, with the Year 6 survey response being the outcomes and the Year 5 survey responses (collected from the year groups just below at the same time) being the control variables. For this analysis, the independent variables per Year 6 binary outcome were:

- Group (Bikeability, Comparison) entered as a categorical variable

and the following control variables:

- The week number in which the survey was completed (entered as a continuous variable)
- Whether the survey took place in the week just after half term
- Whether the free school meal percentage for the school was at least 20%;
- Percentage of Year 5 children in the school having cycled since the beginning of the school year
- Percentage of Year 5 children in the school having cycled on roads since the beginning of the school year
- Percentage of Year 5 children in the school very or fairly confident cycling on roads
- Percentage of Year 5 children in the school with the equivalent outcome to the dependent variable (for example, if the dependent variable is 'cycled in last week' the independent variable would be percentage of Year 5 children in the school who cycled in the last week)[33].

C.11 All non-binary control variables were entered as linear terms.

Sensitivity analysis

C.12 As we noted above, the raw longitudinal data is reasonably well-balanced between Bikeability and comparison schools in terms of Year 5 outcomes, but not well balanced in terms of urban/rural or school-level deprivation (measured in terms of the percentage on free school meals). Furthermore, the sample size of schools is too small to control for these factors well – with the urban/rural difference being impossible to control for because there are no rural schools in the comparison group.

C.13 To test whether the impact estimates are affected by this problem, additional sensitivity analyses have been carried out:

1. Taking out the rural schools from the Bikeability group

[33] The number of independent variables was kept at just six because of the small number of schools in the analysis and, thus, to keep the estimates of impact stable. The first three of the Year 5 variables were selected as the three that would best characterise the cycling levels in the school.

2. Taking out the rural schools from the Bikeability group, plus three schools with very high percentages of free school meals, from the comparison group to leave a sample that is balanced on urban/rural and FSM.

C.14 As a third check, a simple difference-in-difference (DiD) approach has been used to generate estimates of impact. That is the difference in the Year 6 outcomes for pupils minus the Year 5 difference for the same outcome measure. This gives an indication of how much difference the regression step makes to the estimates. If the regression-based estimates are very different to the DiD estimates this would suggest the impact estimates may be sensitive to the set of control variables used in the regression analyses.

C.15 Finally, the peer reviewer suggested a regression approach where, for each outcome, the control variables are the Year 5 equivalent outcome, survey week, whether or not the survey took place in the week after half-term, the free school meal percentage, gender, and whether the pupil had reached Level 1 at the time of the Year 5 survey.

C.16 Table C-3 shows the results of all these tests. Broadly speaking the impact estimates are very similar across all the different analyses. There is no evidence that the results are sensitive to the profile of schools in each of the two groups, Bikeability and comparison, or that the results are sensitive to the set of control variables used.

Table C-3: Impact estimates from sensitivity analyses

	Reported percentage point impact (Section 6)	Impact excluding rural schools	Impact excluding rural schools and three high FSM comparison schools	DiD estimate of impact	Regression with controls as suggested by peer reviewer
Cycled in last week	8	7	7	6	9
Cycled at least three days in last week	5	6	4	3	5
Cycled this term	10	10	10	8	10
Cycled at least three days a week this term	0	-1	-4	0	-1
Cycled on roads in last week	12	11	11	10	12
Cycled on roads at least three days in last week	2	3	4	5	3
Cycled on roads this term	7	7	8	4	8
Cycled on roads at least four days a week this term	-4	-4	-3	-5	-3
Cycled with adults or older siblings this term	8	8	11	4	8
Cycled at least four days a week with adults or older siblings this term	4	3	3	2	4

	Reported percentage point impact (Section 6)	Impact excluding rural schools	Impact excluding rural schools and three high FSM comparison schools	DiD estimate of impact	Regression with controls as suggested by peer reviewer
Bike is main mode of transport to school	-1	-3	-2	-1	-1
Know lots of children of their age that cycle	7	8	9	4	8
Very or fairly confident riding on roads	3	5	3	6	3
Very confident riding on roads	4	3	4	6	6
Parent allows pupil to ride on roads (alone/with friends or with adult)	12	11	11	12	12
Parent allows pupil to ride on roads alone or with friends	3	4	2	3	3
Whether know where to look before getting on to road	15	17	19	15	16

Source: BPSR analysis of SQW Bikeability Pupil E-surveys

Generating estimates of impact from the parent survey

C.17 The parent survey data was intended to address a range of evaluation questions, including parents'/guardians views of Bikeability (as reported on in Section 8), but also to measure impact of pupil cycling using parental reporting of child outcomes and to test whether there is any evidence of a Bikeability impact on parental cycling. In practice, it has not proved feasible to use the parent/guardian survey to address these impact questions, primarily because there are implausibly large differences between the Bikeability schools and comparison school parent/guardian responses, and because we do not have sufficiently rich control variables in the parent/guardian dataset to test whether these differences are attributable to Bikeability or to other systematic differences between the two sets of responses. In addition, the sample size of Year 6 parents/guardians that we can reliably assign to one of the two school groups (Bikeability and comparison) is small, at just 414, with 370 of these from Bikeability schools. Note that the parent survey was entirely voluntary. The method of data collection was very different in the pupil survey, which was conducted in class and where the within-class response rate will have been high. There is much less scope for non-response bias in the pupil survey.

C.18 Comparing parental levels of cycling between Bikeability schools and comparison schools for parents/guardians (mostly mothers – 83%) of Year 6 pupils, there is a markedly higher prevalence of cycling in comparison schools than in the Bikeability schools. This difference remains even after controlling for school characteristics (percentage of pupils on free school

means, urban/rural, and school size). It is highly implausible that the difference is attributable to Bikeability – if it was, then the implication would be that Bikeability prevented, or stopped, parents from cycling. Rather, our conclusion is that this is almost certainly a survey response bias, with the parent/guardian survey in the comparison group attracting a higher response rate from parents who cycle. This would make sense if parents in comparison schools do not see the value in completing a survey about their cycling unless they actually cycle. (Parents in Bikeability schools may have interpreted the survey rather differently, given that their children would have probably been offered, and taken part, in Bikeability. If so, non-cycling parents may have been more likely to respond.)

Table C-4: Parental levels of cycling in Bikeability and comparison schools

	Parents in Bikeability schools (at least 40% of Y6 participating in Bikeability Level 2 or 3)	Parents in comparison schools (fewer than 40% of Y6 participating in Bikeability Level 2 or 3)
Parent cycled this term	57	63
Parent cycled on roads this term	33	46
Sample size Year 6 parents	*245*	*169*

Source: BPSR analysis of SQW parents'/guardians' E-survey

C.19 There is additional evidence of likely bias when we look at how the parents describe their child's cycling, with higher levels of pupil cycling being reported by parents than is reported by pupils. Seventy-eight percent of parents in Bikeability schools, and 74% in comparison schools said that their child had cycled since the start of term. These percentages are much higher than the respective figures of 65% and 56% reported by pupils. This may reflect an underreporting by pupils but is more plausibly attributable to a higher response rate amongst parents of children who cycle.

C.20 For completeness, we have attempted to estimate impact on child cycling, as reported by parents, by controlling for the differences in parental cycling between the Bikeability and comparison groups. This analysis has an underlying assumption that Bikeability does *not* impact on parental cycling, so parental cycling is a legitimate control variable. This gives the impacts shown in Table C-5, which are not dissimilar to the impacts derived from the pupil data in that they point to positive impacts on levels of cycling, whether parents allow their child to ride on roads, and perceived levels of child confidence. Only the impact on confidence reaches significance though. Nevertheless, these findings do help validate the impacts derived from the pupil data, even though they in no way supersede them[34].

[34] Our belief is that the impacts on child cycling in schools are systematically smaller than the pupil survey-based estimates because there is a residual upward bias in the parental comparison group towards parents and children who cycle and that the control variables have not removed this bias.

Table C-5: Regression-adjusted outcomes for Year 6 pupils from the parent survey

	Pupils in Bikeability schools (at least 40% of Y6 participating in Bikeability Level 2 or 3)	Pupils in comparison schools (fewer than 40% of Y6 participating in Bikeability Level 2 or 3)	Percentage point difference	p-value
	% of Y6 pupils	*% of Y6 pupils*		
Cycled this term	78	75	3	0.58
Cycled on roads this term	36	36	0	0.95
Cycled with adults or older siblings this term	66	66	0	0.98
Child confident riding on roads	45	18	27	<0.01**
Parent allows pupil to ride on roads (alone/with friends or with adult)	56	48	7	0.31
Parent allows pupil to ride on roads alone or with friends	6	3	3	0.15
Sample size Year 6 parents	*245*	*169*		

Source: BPSR analysis of SQW parents'/guardians' E-survey