



Cycle training for children: Which schools offer it and who takes part?



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ABSTRACT

Purpose: The 'Bikeability' cycle training scheme, a flagship policy of the government in England, aims to give children the skills and confidence to cycle more safely and more often. Little, however, is known about the scheme's reach. This paper examined which schools offer Bikeability, and which children participate in cycle training.

Methods: We used operational delivery data to examine which primary schools in England offered Bikeability. Predictors included the deprivation level of the student body and the local prevalence of cycling. We then examined cycle training participation using data from 6986 participants (age 10–11) in the nationally-representative Millennium Cohort Study. Parents reported whether their child had completed formal cycle training, along with other child and family factors. We used operational data to identify children whose school had previously delivered Bikeability.

Results: 55% of schools offered Bikeability to the cohort of children leaving primary school in 2012; this fell to 48% in schools in the top tenth for student deprivation. Among Millennium Cohort participants, 47% of children had completed cycle training; this proportion rose to 68% among children whose schools had offered Bikeability. In adjusted robust Poisson regression models, participation rates were lower among minority ethnic children, particularly South Asians; among children who played sport less often; and among children whose parents were poorer or less educated. The magnitude of these differences was largest among children whose schools had not offered Bikeability (all $p \leq 0.02$ for interaction, except for income where $p=0.09$), although trends in the same direction were observed in schools that had offered Bikeability.

Conclusions: Offering high-quality cycle training free of charge in English schools reduced but did not eliminate inequalities in cycle training participation. Further promoting the scheme to parents and schools, particularly in deprived areas, would be expected to increase uptake and help reduce current inequalities in participation.

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1. Introduction

Promoting cycling, including promoting cycling among children, has in recent years moved up multiple policy agendas in a number of high income countries (The PEP, 2009; Australian Department of Health and Aging, 2010; Department for Transport, 2011; Department of Health and Department for Transport, 2010; Welsh Government, 2012; American Public Health Association, 2012). This reflects various factors, including the health benefits of increasing physical activity among children (Chief Medical Officers of England, Scotland, Wales, and Northern Ireland, 2011); the economic and social benefits of reducing the congestion and community severance associated with car-dominated transport systems (Woodcock and Aldred, 2008; Cabinet Office, 2009); and the environmental benefits of reducing the greenhouse gas emissions associated with motorised travel (Woodcock et al., 2009). The potential magnitude of these benefits is considerable, given the substantial proportion of motorised trips that could in theory be made by bicycle (Woodcock et al., 2013): for example, around two-thirds of short trips (≤ 2 km) by children are made by car and only 3% by bicycle (Department for Transport, 2013).

Fears about dangerous traffic and about children's ability to cycle safely on the road are reported by many children and parents as key reasons why children do not cycle more (Lorenc et al., 2008). One correspondingly popular (Granville et al., 2002; Ipsos MORI, 2010)

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means of promoting cycling is ‘cycling proficiency’ training for children. Such training is very common in several high-cycling European countries such as the Netherlands, Denmark and Germany, and is also fairly widespread (although more variable in its regional coverage) in some lower-cycling countries such as France, the United States, Australia and New Zealand (Pucher and Buehler, 2008; Pucher et al., 2010). In the UK, the Department for Transport substantially increased its support for such child cycle training through its launch of the Bikeability scheme in England in 2007. Aspiring to provide “cycling proficiency for the 21st century” (Department for Transport, 2012a, p. 6), this flagship scheme involves using schools to deliver high-quality on- and off-road cycle training during the final years of primary school. Typically children in primary school learn both how to ride a bicycle (level 1) and also how to make short journeys safely and confidently on local roads (level 2). Schools can offer the scheme free of charge, with costs covered by central and local government funding. Bikeability sessions are delivered by external organisations in collaboration with schools, and parents are asked for their permission for their child to take part.

The aim of Bikeability is to give children “the skills and confidence they need to cycle on today’s roads...[and thereby to] encourage more children to cycle more often, more safely” (Frearson and Hewson, 2014, p. 7). Evidence as to the scheme’s impact is currently strongest with respect to the first, more proximate, set of outcomes, with a recent controlled evaluation finding positive effects on skills such as hazard perception and on confidence (Hodgson and Worth, 2015). There is currently less evidence that Bikeability increases cycling frequency, although one ecological study (Department for Transport, 2012) and one individual-level pilot study report encouraging results (Frearson, 2013). In this respect the evidence base for the effectiveness of Bikeability mirrors the wider international literature, which provides reasonable evidence that child cycle training can have positive impacts on knowledge, skills or safety behaviour (reviewed in RoSPA (2001); Richmond et al. (2014), see also Ducheyne et al. (2014); Hooshmand et al. (2014)) but contains few studies of impacts on cycling frequency. The studies of these impacts that do exist are inconclusive, reporting mixed findings (Savill et al., 1996) or null results in small samples (Ducheyne et al., 2014).

The Bikeability evidence base also mirrors the wider literature in containing very little information as to which children actually receive cycle training; indeed, to our knowledge no study has been published that examines this. Coverage of the Bikeability scheme in England grew rapidly after 2007, but in the past few years uptake has flattened at around half of all children of the relevant age ($N=250,000$ children trained per year) (Department for Transport, 2014). Examining which schools and which children are receiving this training could help policymakers and practitioners to understand the current distributional impacts of Bikeability and could inform attempts to increase the reach of the scheme still further. It would also contribute to the wider international evidence base surrounding initiatives to promote cycling, which typically contains very little examination of the likely or actual social distribution of impacts (Yang et al., 2010; Ogilvie et al., 2004). Several commentators have highlighted this shortcoming as a source of concern (NICE, 2008, 2012; Marmot, 2010), particularly in light of calls for public policy to be delivered in ways that are equitable as well as evidence-based (Ståhl et al., 2006; Kahlmeier et al., 2010). This paper therefore aimed to combine recent school-level and child-level information from England in order to examine (1) which schools offer Bikeability training and (2) which children participate in cycle training.

2. Methods

2.1. School-level analyses: which schools offer Bikeability?

2.1.1. Sample of schools

The Department for Education’s ‘Edubase’ is a register containing information on all state-funded and private schools in England and Wales. Using Edubase, we identified all English primary schools that were open on 1st September 2011 and that contained both Year 5 and Year 6 pupils. This generated a list of 14,401 English primary schools, from which we excluded 1590 in London (as we did not have Bikeability delivery data for this region), giving a sample of 12,881 schools.

2.1.2. Outcome: Bikeability offered by schools

We sought to identify all schools that had offered Bikeability cycle training to the cohort of children leaving primary school in 2012. For this we used operational data provided by the Department for Transport. Schools are encouraged to deliver Bikeability in the final year of primary school (Year 6, age 10–11), but a minority instead deliver the training a year earlier (Year 5, age 9–10). We therefore sought to identify all schools that had offered cycle training to the 2012 cohort of interest at some point during their final two years of school. We did this by identifying schools that either offered Bikeability to Year 5 children in the academic year 2010/11 or offered Bikeability to Year 6 children in the academic year 2011/12. In the case of some Year 5 delivery this involved approximating academic years using financial years, but sensitivity analyses indicated that the likely effect of this on our results was minimal (see [Supplementary material](#) for further details).

2.1.3. Exposures: school-level characteristics

Edubase additionally provided data on the number of pupils in the relevant year group, and also on the proportion of children in the school receiving free school meals, a commonly-used marker of the deprivation of the student body. Both of these items of data were recorded in the school census collected in January 2012. Edubase also linked each school to the 2004 Rural and Urban Area Classification (Bibby and Shepherd, 2004), thereby defining its urban/rural status. Urban/rural status was defined as a three-level categorical variable: large urban areas with a population $> 10,000$; smaller towns and fringe areas; and villages, hamlets and isolated dwellings

Using the schools’ postcodes, we matched each school to its local authority and region of England. To establish area-level cycling prevalence, we also matched each school to its Middle Super Output Area; these are administrative areas with populations of around 5000, which is approximately the same scale as the catchment area of a primary school. We then assigned to each school the proportion of adults in the Middle Super Output Area who reported that cycling was their ‘usual, main mode’ of travelling to work in the United Kingdom (UK) census collected in March 2011. We have previously shown that this measure of commuter cycling provides a reasonable proxy for the total cycle mode share in an area, as calculated with reference to all trips made by adults aged over 16 (Goodman, 2013). Note that correspondingly fine-grained proxies for total cycling participation among children are not available, but the National Travel Survey provides evidence that adult modal share and child modal share are fairly highly correlated at a regional level (Pearson correlation coefficient 0.72) (Department for Transport, 2013).

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