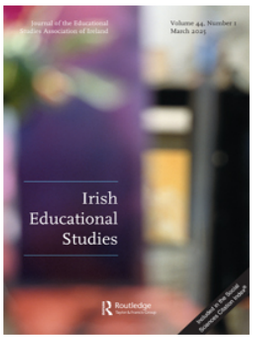

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Census and sustainability: school provision, urban teenagers, and unequal access to active transport in the Republic of Ireland

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ABSTRACT

This paper analyses adolescent active transport (AT) to education in Ireland. In Ireland, there is broad consensus that commuting by walking and cycling can be advantageous to health, learning, and reducing traffic congestion and transport emissions. Thus Irish decision-makers, building on academic literature that claims that AT follows population size and density without considering the placement of schools, frequently propose 'behavioural change' among urban children as the primary means to overcome low AT. However decision-makers rarely investigate children's actual behaviour as commuters to education, consult children's commuting data, or consider the impact of school provision on AT. This paper challenges these approaches. Employing data reported by Irish teenagers to Census 2016 and 2011, it shows that AT does not follow population size or density but does follow educational provision including the provision of inclusive schools not segregated by religion, gender, or ability to pay.

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Education; Ireland; Equality; Active transport; Policy

Introduction

In 2020, the Irish Department of Transport, Tourism and Sport (DTTAS) conducted a Sustainable Mobility Policy Review, publishing *Background Paper 2: Active Travel* (DTTAS 2020). *Active Travel* included observations on the health and climate benefits of commuting by active transport (AT), as well as an outline of the means by which the state planned to shift commuters out of their cars and onto their feet or bicycles. In its plan, the DTTAS explicitly included children and schools as targets for state action by identifying student commuters as the subjects of 'behavioural change intervention' (37) and by casting schools and colleges as the sites for 'educational and training programmes' (29), such as the DTTAS-funded Green Schools Travel Programme, that would 'influence' or 'convert' students to walking and cycling (7). However while this commitment to school-based 'behavioural change' led the DTTAS to include measures as specific as 'the phased opening times of schools, and a relaxation of the obligation

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for female school students to wear skirts (54)', it had surprisingly little to say about students' actual commuting behaviour. Indeed as the DTTAS admitted, it based its analysis of travel to education on the adults-only National Travel Survey, stating that, 'When examining factors such as the mode share for travel to education, it is important to note that the NTS does not reflect the mode share for the whole student population as the survey only sampled persons aged 18 years and over' (DTTAS 2020, 19).

Perhaps because of this failure to consider data specifically derived from children's experiences as commuters to school, the DTTAS overlooked a dramatic success story in the area of active transport. This was the remarkable increase in adolescent AT in three towns in the Greater Dublin Area (GDA): Donabate and Lusk, in the suburban Fingal County Council area north of the city; and Rathnew, Co. Wicklow. In Donabate alone, 331 more 13- to 18-year-old students walked or cycled in 2016 than in 2011 – the largest increase in any town or city in Ireland, bringing the total proportion to 69.49% – while in each of the three towns, combined AT in 2016 exceeded 2011 uptake by more than thirty per cent (CSO 2017a; 2012). At the same time, *Active Travel* also overlooked more sobering evidence indicating that in some towns including Courtown, Co. Wexford (1.85%); Duleek, Co. Meath (0.55%); and Sallins, Co. Kildare (3.21%), virtually no teenagers walked or cycled to school.

As important, by avoiding data reported by children the DTTAS missed a crucial opportunity to develop a policy response to such stark differences in community AT outcomes – or even to diagnose such disparities by reflecting on what else linked Donabate, Lusk and Rathnew and distinguished them from Courtown, Duleek and Sallins. Was it the implementation of different school opening times or policies on girls' school uniforms? Was it different attitudes towards the weather or traffic accidents? Or was it something much more obvious, such as the presence or absence of local post-primary schools? After all, 2011 saw the opening of Donabate Community College – a newly-constructed, inclusive school (i.e. free, mixed-gender and multi-denominational) – while children also gained access to newly-constructed, inclusive post-primary schools in Lusk and Rathnew.[1] However in Courtown, Duleek and Sallins, there were no post-primary schools at all.

In Ireland, a wealth of academic, policy, and media literature associates low levels of active transport with a broad range of ills including traffic congestion and adverse health impacts and identifies benefits to walking and cycling that include 'mitigating the rise in transport emissions' (DTTAS 2020, 29; NTA 2016), 'better cardiovascular fitness' (Woods et al. 2010, 115) and improved learning. As two headlines in the *Irish Times* put it, 'Children who walk to school are ahead of the rest' (Gillham 2013) and 'Kids who cycle or walk to school "learn better"' (Cleary 2019). Nonetheless, adolescent AT is lower in Ireland than in many other European countries such as Denmark, Germany and Poland (Kleszczewska et al. 2020).

While Irish decision-makers broadly agree that low AT is a problem and that increased AT is desirable, they rarely consider whether deficits in educational provision have contributed to low AT. Building on academic research that correlates adolescent AT to the population size and density of settlements without considering the placement of schools; and that presumes that 'distance and time' to school are factors that 'are constant and cannot be changed' (Woods et al. 2010, 120), decision-makers have framed low AT as a problem of behaviour or attitudes rather than educational provision or planning.

Thus when seeking solutions to low AT decision-makers have eschewed educational investment designed to equalise and maximise urban children's access to schools in favour of investment in neoliberal 'nudges' to change urban children's defective behaviour.[2] Hence in its *Transport Strategy for the Greater Dublin Area 2016–2035* the National Transport Authority (NTA) advocated 'promoting behavioural change for journeys to school' and mentioned Green Schools five times (NTA [2016]). And hence in its *Dublin City Development Plan 2022–2028 Pre-Draft Plan Public Consultation Strategic Issues Paper* Dublin City Council (DCC) promoted 'proactive engagement with communities and the Green Schools programme' and 'proactive engagement with communities, schools, businesses and other stakeholders to collaboratively bring about behavioural change' (DCC 2020, 69, 66) – but failed to promote engagement with communities that would identify deficits in educational provision or assess how those deficits might limit children's access to AT. Although Irish policy in this area recognises that 'behaviour change is complex, challenging and takes time' (DOH/DTTAS 2016, 5), it rarely questions whether it is the best remedy.

This paper challenges this approach by directly considering adolescent AT in relationship to the spatial distribution of post-primary schools. Does adolescent walking and cycling follow population size and density, as existing literature claims? Or does it follow educational provision? And if, as my previous research indicates, investment in the post-primary 'educational landscape' is not equal but rather is 'thick' in some places but 'thin' in others (Mancini 2022, 4)[3], what are the implications for student access to active transport and, by extension, for health, wellbeing and learning and for traffic congestion and emissions?

AT and the educational landscape

In seeking to answer these questions, this paper makes a significant departure from existing research. In line with a growing body of literature identifying distance to school as the greatest barrier to AT (Beck and Greenspan 2008; Dellinger and Staunton 2002; Martin and Carlson 2005; Su et al. 2013; Yeung, Wearing, and Hills 2008), recent international scholarship argues that 'from a public health perspective it seems important to limit home-school distances' (Vanwolleghem et al. 2016, 12). However AT research rarely focuses directly on the systemic causes of excess home-school distance or even on the regional or national distribution of localities in which students experience poor AT outcomes. Thus it is sometimes taken for granted 'that children residing in built environments that are more dense and urban are significantly associated with more active travel to school' (Curtis, Babb, and Olaru 2015, 21). Moreover even within research that recognises the barrier to walking and cycling posed by excessive home-school distance, scholars sometimes treat it as an intractable problem to be put aside so as to identify 'non-distance factors related to children's active transport' (Henne et al. 2014, 643) among children living near schools (Gropp, Pickett, and Janssen 2012).

As noted, Irish research reflects these tendencies in its assumption that AT follows urbanisation and in its assertion that home-school distance 'cannot be changed'; and also in its explicit exclusion, in some studies, of children who live beyond 'a realistic and achievable distance within which adolescents can actively commute' (Nelson and Woods 2010, 258). Moreover Irish research on adolescent AT frequently relies on

studies such as *The Take PART study*, *The Children's Sport Participation and Physical Activity Study* and *Growing Up in Ireland* (Murtagh, Dempster, and Murphy 2016; Nelson et al. 2008; Nelson and Woods 2010; for overview see Costa et al. 2020) that may not be the best sources for analysing adolescent AT across the 'educational landscape'. Although they have merit for other uses, these studies suffer from various limitations including omitting significant portions of the post-primary age cohort;[4] relying on school-based surveys[5] and thus overlooking 'communities without schools' (Mancini 2022, 4); and a lack of geographical legibility that would permit the assessment and comparison of AT outcomes by specific locality.

In contrast to the approach taken by much existing research, this paper will adapt my concept of the 'educational landscape' to the study of adolescent AT, aiming to provide analysis that is 'geographically legible' and accounts for 'the places *between* schools or certain types of schools'; and that furthermore recognises the fundamentally historical character of the educational landscape: that it, '(like all built environments) … is not "natural" but is made by decision-makers' (Mancini 2022, 4). As important, the paper aims to contest an approach to policy-making that, by overlooking data reported by children, makes children invisible even while holding them responsible for social and environmental ills such as traffic congestion. In this respect, it will emulate international research that emphasises 'the link between child friendly cities and sustainable cities' (Gilbert et al. 2018).

To pursue these aims, the paper adopts a composite methodology. First, it integrates Census 2016 commuting data reported by 13- to 18-year-old students and Census 2016 population data with post-primary school-provision data published by the DES. Here the purpose is to assess current literature's claim that adolescent AT follows population size and density and that distance and time to school are 'constant and cannot be changed'. The two main findings in this part of the paper challenge these claims. The first is that adolescent AT did not follow population size or density. Rather, when AT outcomes within Ireland's 200 urban settlements (1500 – greater than 500,000) are compared by locality, there was no association between population size/density and AT. Thus by settlement, no Irish cities including Dublin made the top 40 for adolescent AT but 26 small towns (1500 – less than 5000) did – even while other towns reported adolescent AT rates of zero. The second finding is that AT did follow educational provision, such that regardless of population size or density the lowest adolescent AT accrued in those settlements without schools and the highest in those with schools within their settlement boundaries – with the best outcomes in settlements with an inclusive post-primary school (i.e. not segregated by gender, religion, or ability to pay) inside their settlement boundary.

The paper then moves to its second mode of analysis, assessing recent policy documents for their treatment of children's commuting behaviour, school provision, and AT – and, more fundamentally, to assess the degree to which Irish decision-makers grant children and their communities the right to be heard before imposing 'behavioural change interventions'. To what degree do decision-makers consider commuting data reported by children or recognise differences in outcomes by locality? To what degree do they recognise school provision as an aspect of planning and invite public consultation on deficiencies in provision? Here the paper finds that decision-makers frequently render children invisible by ignoring their data; demonstrate little awareness of

disparities in commuting outcomes between localities or that deficiencies in school provision may contribute to low AT; and are quick to impose 'behavioural change' without giving children or communities the means to identify and remedy such deficiencies.

The myth of size

Ireland's largest and most comprehensive dataset on student commuting as reported by adolescents is Census 2016. Census 2016 elicited responses from 349,961 13- to 18-year-olds travelling to education, who comprised 11.81% of all commuters in Ireland (CSO 2017b). Unlike school surveys, Census 2016 captured responses from students across the 13–18 post-primary-school age cohort and across all localities, publishing AT data by settlement for Ireland's 200 urban areas (towns/cities 1500 or greater) and by tier for smaller settlements of 1000–1499, 500–999, 'under 500 but with at least 50 inhabited houses' and 'Remainder of country' (CSO 2017a).

By matching this data to Census 2016 population data (CSO 2017c), it is possible to compare AT uptake among 13- to 18-year-old students in urban areas by settlement and tier; and, in rural areas, by tier. As noted, existing literature claims that adolescent AT follows population size and density, such that children in the largest and densest urban areas experience the highest levels of walking and cycling to school. This is most explicitly articulated in Nelson et al. (2008, 3; see also Murtagh, Dempster, and Murphy 2016), who argue that in Ireland 'the odds of active commuting are 12.6, 10.1, and 6.8 times higher' in localities of 500,000 or more inhabitants, 50,000 to less than 500,000 inhabitants and 5000 to less than 50,000 inhabitants 'than among adolescents in settlements of <5000'.

An assessment of 13- to 18-year-old student AT by population tier shows that, as predicted, combined walking and cycling was highest in Dublin (the only settlement in the 500,000 or greater tier) (Table 1). However this assessment also shows that adolescent AT in Dublin was only marginally higher than in large towns (5,000 to less than 50,000), rather than nearly double; and that in small towns (1500 to less than 5000) the proportion of teenagers who commuted on foot was actually higher than in Dublin. Similarly, this comparison shows that teenagers in smaller cities (50,000 to less than 500,000) were less likely to commute by AT than teenagers in towns or even rural villages of 1000 to less than 1500.

Table 1. Adolescent active transport to education by population tier, 2016.

	13- to 18-year-old students, all modes (no.)	% on foot	% on bicycle	% active transport (total)
≥500,000 (Dublin city and suburbs)	72696	33.29	6.57	39.87
50,000-<500,000 (4 cities)	28094	25.26	1.65	26.91
5,000-<50,000 (81 large towns)	78813	36.4	1.91	38.31
1500-<5000 (114 small towns)	21845	33.12	0.48	33.6
1000-<1500	7068	26.22	0.74	26.95
500-<1000	10227	13.63	0.25	13.88
Towns <500 but with at least 50 inhabited houses	9125	5.52	0.16	5.69
Remainder	122300	2.57	0.27	2.84
State	350168	21.16	2.08	23.24

Source: Author's tabulation based on CSO (2017a; 2017c).

As this indicates, Census 2016 does not confirm the claim that Irish teenagers' 'odds of active commuting' improve by the size of settlement they inhabit. Rather, it suggests there was no consistent pattern linking participation in AT to population size (at least among settlements 1500 or greater). Second, a comparison of AT across population tiers indicates that 'the odds' of walking or cycling to school did not drop dramatically within settlements of less than 5000. Rather, if such a dividing line for adolescent AT existed it fell somewhere below the rural threshold of 1500. Indeed despite Nelson et al.'s claim that teenagers in Dublin have odds of walking and cycling that are '12.6 times' higher 'than among adolescents in settlements of <5000', this was not the case even when comparing Dublin to areas with fewer than fifty inhabited houses.

An examination of 13- to 18-year-old student AT by settlement, beginning with outcomes by settlement within tiers, further challenges the predicted association between population size and adolescent AT. Despite significant size differences within each tier, larger towns and cities did not generally report higher rates of walking and cycling. In all tiers, the largest settlement failed to record the highest AT, and the smallest settlement failed to record the lowest AT (Table 2). Thus even though Castlecomer, Co. Kilkenny (pop. 1502; AT 68.75%) was the smallest of Ireland's 200 urban settlements in 2016, more than two thirds of its teenagers commuted by walking or cycling – a higher proportion than in all but 3 other small towns (and all but 2 large towns and all cities including Dublin).

A further comparison of AT outcomes by settlement across all 200 urban areas also undermines a link between population size and AT, showing that teenagers in the largest cities and towns did not experience the highest AT. To the contrary, the top twenty per cent of settlements for adolescent AT included no cities but did include 26 small towns (Figure 1). Indeed, the largest settlement in the 'top 40' was Droichead Nua/Newbridge, Co. Kildare (pop. 22,742) – with no cities other than Dublin (88 of 200) ranking even in the top 100. Moreover, a comparison of AT outcomes between 13- to 18-year-olds and primary-school children (5–12 years) showed lower AT for teenagers than for younger children in the three largest cities of Dublin, Cork, and Limerick – in contrast to 139 of the remaining 197 settlements and all but two 'top 40' towns.

An assessment of 13- to 18-year-old student AT by settlement also challenges the prediction that AT follows population density (Table 3). Here, the lack of population density benchmarks within existing Irish AT research (and the impossibility of pinning that research to localities by population density) makes it more difficult to make a direct comparison to that research. For this reason the paper retains the previously-noted population size tiers, comparing AT outcomes by population density therein. This

Table 2. Adolescent active transport to education within population tiers, 2016.

	Largest and smallest settlement in tier	Population (no.)	13- to 18-year-old students commuting by AT (%)
50,000-<500,000	Cork	208669	25.86
	Waterford	53504	29.02
5,000-<50,000	Drogheda, Co. Louth	40956	41.81
	Carrickmacross, Co. Monaghan	5032	52.11
1500-<5000	Oranmore, Co. Galway	4990	40.07
	Castlecomer, Co. Kilkenny	1502	68.75

Source: Author's tabulation based on CSO (2017a; 2017c).

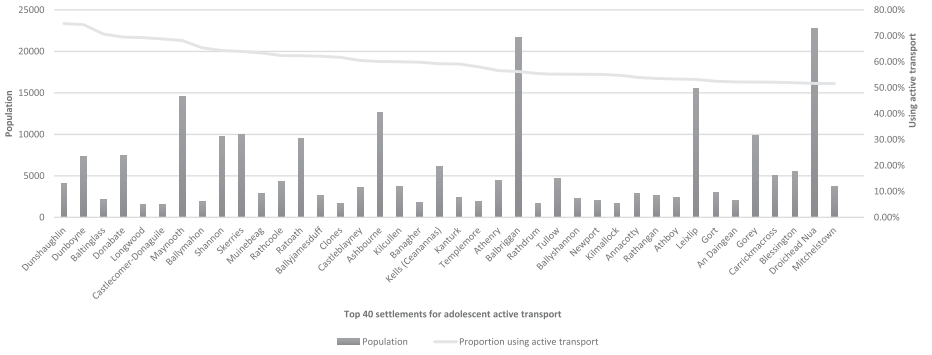

Figure 1. Top 40 settlements for adolescent active transport with corresponding population size, 2016. Source: Author's tabulation based on CSO (2017a; 2017c).

comparison shows that AT did not follow population density: within each tier, adolescent AT was higher in the settlement with the lowest population density than in the densest settlement. Moreover in Carndonagh, Co. Donegal, the small town with the lowest population density (505.8/sq km; AT 38.31%), teenagers were ten times as likely to walk or cycle to school as teenagers in the small town with the second-highest population density – Stamullen, Co. Meath (3627.6/sq km, AT 3.45%) – and had better 'odds' of walking to school (38.31%) than teenagers in Dublin (3677.5/sq km; 33.29% on foot), where population density was seven times greater.

An assessment of 13- to 18-year-old student AT by population density across all 200 urban settlements also challenged a link between population density and adolescent AT, indicating that there was no consistent pattern linking the two (Figure 2). Rather, in some settlements of very low population density teenagers nonetheless enjoyed exceptionally high AT. For example a greater proportion of teenagers in Baltinglass, Co. Wicklow (70.67% AT) commuted by walking or cycling than in 197 of Ireland's 200 urban settlements – even though Baltinglass's population density (800.4/sq km) was below the average for settlements of 500 to less than 1000.

In summary, an analysis of national commuting data reported by 13- to 18-year-old students to Census 2016 shows that adolescent AT does not follow population size or density. Thus the highest adolescent student AT by settlement anywhere in Ireland was achieved in a small town: Dunshaughlin, Co. Meath (pop. 4035), where 74.71% of teenagers commuted by walking or cycling. However, it also reveals a second important finding. This is that average adolescent AT outcomes by population tier do not reflect

Table 3. Adolescent active transport and population density (2016).

	Densest and least dense settlement	Population/sq km	13- to 18-year-old students commuting by AT (%)
50,000-<500,000	Limerick City and Suburbs	1591.2	30.71
	Waterford City and Suburbs	1107.5	39.87
5,000-<50,000	Kinsealy-Drinan, Co. Fingal	5830.3	8.7
	Roscommon, Co. Roscommon	644.8	28.18
1500-<5000	Balrothery, Co. Fingal	3786.7	11.86
	Carndonagh, Co. Donegal	505.8	38.31

Source: Author's tabulation based on CSO (2017a; 2017c).

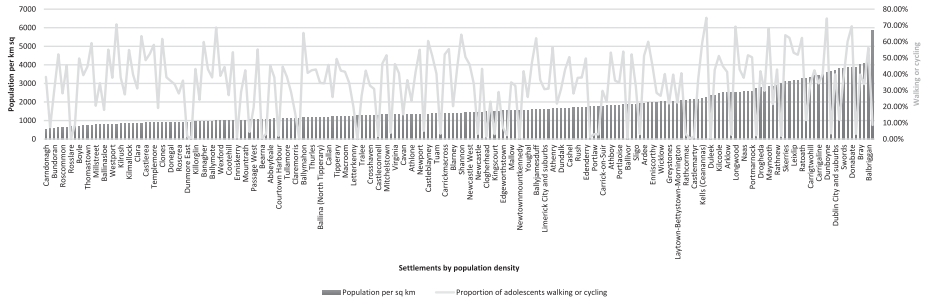

Figure 2. Urban settlements by population density with proportion of adolescents walking or cycling to school, 2016 Source: Author's tabulation based on CSO (2017a; 2017c).

typical results, but instead mask wildly disparate outcomes even among settlements of similar size and density. Thus although an exceptionally high proportion of teenagers in Dunshaughlin commuted by walking or cycling, in thirty-one other small towns including Duleek (pop. 4219; AT 0.55%) and Stamullen, Co. Meath (pop. 3361; AT 3.45%) fewer than five per cent of 13- to 18-year-old students did – while in three small towns (Newmarket-on-Fergus, Co. Clare; Moycullen, Co. Galway; Rosslare, Co. Wexford), no teenagers walked or cycled to school. And thus while 74.32% of teenagers in the large town of Dunboyne, Co. Meath (pop. 7272) commuted by AT, their peers in Sallins (pop. 5849; AT 3.21%) were twenty-three times less likely to do so.

AT follows school provision

To contextualise these disparities, let us turn to the educational landscape. The most comprehensive datasets on school location in Ireland are the DES's annual Post-Primary Schools Lists (PPSLs). By matching data from the 2015–2016 PPSL (DES 2016) to Census 2016's Small Area Population Map (SAPMAP), it is possible to evaluate levels of educational provision in individual settlements, identifying the presence or absence of schools; whether those schools were located inside or outside settlement boundaries; and, in settlements without schools, whether there was a school nearby in an adjacent settlement (here using 2.5 km, following Nelson et al.'s identification of 1.5 miles as the limit for adolescent walking to school). And, by comparing AT outcomes to educational provision on a settlement-by-settlement basis, it is possible to assess relationships between the two.

To begin such an assessment, we may revisit the 'top 40' settlements in Ireland with the highest AT. As noted, all of these were small or large towns; in every one, a majority of 13- to 18-year-old students commuted by walking or cycling (see Figure 1), up to a maximum of 74.71%. An evaluation of educational provision in the 'top 40' indicates that every one had at least one post-primary school inside its settlement area (as per SAPMAP).

This was in sharp contrast to educational provision in the twenty per cent of urban settlements with the lowest adolescent AT (also all small or large towns). Here 39 of 40 towns recorded AT uptake that was lower among 13- to 18-year-old students than primary-school pupils; 32 of 40 towns recorded AT uptake of less than five per cent;

and in the town in the 'bottom 40' for AT with the highest AT (Cavan, Co. Cavan; 15.22%) only one in seven 13- to 18-year-old students commuted by walking or cycling. An evaluation of educational provision in the 'bottom 40' shows that 38 of 40 had no post-primary school. The only exceptions were Clifden, Co. Galway (AT 8.82%) and Cavan town – where in both cases one or more school was outside of the settlement area.

This indicates that adolescent AT does not follow population size or density, but does follow educational provision – findings that are further corroborated by an analysis of AT outcomes by educational provision in all small and large towns (Table 4 and Table 5). In Ireland's 114 small towns, the highest AT among 13- to 18-year-old students occurred in 72 towns with schools in which all schools were located inside the settlement boundary, while the lowest AT occurred in 30 towns where there was no school and no school within 2.5 km in an adjacent settlement (Table 4). Similarly in Ireland's 81 large towns, the lowest AT outcomes by far were reported by children in the only two towns without post-primary schools in 2016: Sallins and Kinsealy-Drinan (Fingal; AT 8.70%).

Table 4. Post-primary school provision and AT in towns 1500-<5000, 2016 (*excludes boarding schools).

	With secondary school(s)			No secondary school		
	Total	All secondary schools inside settlement boundary	1 or more school outside settlement boundary	Total	Settlement with secondary school within 2.5km	No settlement with secondary school within 2.5 km
Towns (no.)	76	72	4	38	8	30
Max. AT 13 to 18 year olds	74.71%	74.71%	27.03%	42.86%	42.86%	7.19%
Min. AT 13 to 18 year olds	8.82%	20.22	8.82%	0.00%	3.45%	0.00%
No. with 13 to 18 AT>50%	31	31	0	0	0	0
Proportion 13 to 18 AT>50%	40.79%	43.06%	0.00%	0.00%	0.00%	0.00%
No. with 13 to 18 AT<5%	0	0	0	31	3	28
Proportion 13 to 18 AT<5%	0.00%	0.00%	0.00%	81.58%	37.50%	93.33%
Max. AT 5 to 12 year olds	62.14%	62.14%	30.57%	64.60%	49.50%	64.60%
Min. AT 5 to 12 year olds	8.73%	8.73%	17.58%	4.52%	7.32%	4.52%
No. with 5 to 12 AT >50%	6	6	0	6	0	6
Proportion with 5 to 12 AT >50%	7.89%	8.33%	0	15.79%	0	20%
No. with 5 to 12 AT<5%	1	0.00%	0	1	1	1
Proportion 5 to 12 AT<5%	1.32%	0.00%	0	2.63%	1.25%	3.33%
No. with higher AT in 13 to 18 cohort	67	67	0	1	1	0
Proportion with higher AT in 13 to 18 cohort	88.16%	93.05%	0.00%	2.63%	12.50%	0.00%

Source: Author's tabulation based on CSO (2017a, 2017c, SAPMAP), DES (2016)

Table 5. Post-primary school provision and AT in large towns (5,000-<50,000), 2016.

		With school(s)		
	Total	All schools inside settlement area	1 or more school outside settlement area	No school
Towns (no.)	79	61	18	2
Max. AT	74.32%	74.32%	56.22%	8.70%
Min. AT	15.22%	19.70%	15.22%	3.21%
No. with AT > 50%	15	14	1	0
Proportion with AT > 50%	18.99%	22.95%	5.56%	0.00%
No. with AT < 5%	0	0	0	1
Proportion AT < 5%	0.00%	0.00%	0.00%	50.00%

Source: Author's tabulation based on CSO (2017a; 2017c, SAPMAP), DES (2016).

AT follows inclusion

In addition to providing school location data, the PPSLs also record data on whether state-funded schools were segregated by religion, gender, and/or ability to pay.[6] Thus in combination with Census 2016 they may also be used to assess a second aspect of the relationship between educational provision and adolescent AT: that between inclusion or segregation in the educational landscape and AT. Here existing literature implies that AT follows school segregation by claiming that 'more children attending single gender schools (i.e. girls only or boys only) actively commuted to school' (Woods et al. 2010, 118). However like the assertion that AT is highest in the largest urban areas, this claim is founded on school-based survey data (in this case from 70 post-primary schools) and is not linked to specific locations. Thus it overlooks the possibility that, across whole communities (as opposed to within single schools that may or may not be representative of the educational landscape), educational segregation may suppress AT outcomes.

With this in mind, we may revisit Ireland's 'top 40' settlements for AT in 2016 to ascertain if AT followed school segregation. A consideration of school provision in these settlements (as noted, all small or large towns) shows, to the contrary, that every one had at least one school that was free and not segregated by gender; and that 38 had at least one inclusive school. This suggests that the provision of inclusive schools may be associated with higher AT.

This association is further established by a comparison, across all 195 towns, of 13- to 18-year-old student AT in towns with at least one inclusive post-primary school versus in towns without one. This shows that adolescent AT was higher in towns with at least one inclusive post-primary school than in towns where all schools were segregated by religion (Table 6). Moreover within towns with only denominational schools, a comparison of towns in which those denominational schools included gender-mixed schools to towns in which all schools were segregated by both religion and gender indicates that a higher proportion of teenagers walked or cycled in the towns with gender-mixed schools (Table 6). And in the only town where schools were exclusively segregated by both religion and gender and in which there was post-primary provision only for girls (Carrigtwohill, Co. Cork), AT outcomes were sharply unequal by gender, with 66.42% of girls but only 2.76% of boys commuting by AT. Similarly, a comparison of towns with only free schools to those with at least one state-funded fee-charging school (no towns had only fee-charging schools) shows that a higher proportion of teenagers

Table 6. Adolescent AT and inclusive vs. segregated school provision, Irish towns, 2016.

1500-<5000	With an inclusive school	With denominational only	With denominational and gender-segregated only		
Towns (no.)	65	11	2		
Max. AT	74.71%	62.10%	45.75%		
No. with AT > 50%	29	2	0		
Proportion AT > 50%	44.62%	18.18%	0.00%		
5000-<50,000k	**With an inclusive school**	**With denominational only**	**With denominational and gender-segregated only**	**With school(s), all free**	**With a fee-charging school**
Towns (no.)	71	8	3	70	9
Max. AT	74.32%	42.41%	33.69%	74.32%	51.64%
No. with AT > 50%	15	0	0	14	1
Proportion AT > 50%	21.13%	0.00%	0.00%	20.00%	11.11%
All towns 1500-<50,000	**With an inclusive school**	**With denominational only**	**With denominational and gender-segregated only**		
Towns (no.)	136	19	5		
Max. AT	74.71%	62.10%	45.75%		
No. with AT > 50%	44	2	0		
Proportion AT > 50%	32.35%	10.53%	0.00%		

Source: Author's tabulation based on CSO (2017a; 2017c, SAPMAP), DES (2016).

commuted by AT in towns with only free schools than in those with a state-funded fee-charging school (Table 6).

These findings suggest that, in addition to following educational provision, adolescent AT follows the state provision of inclusive post-primary schools not segregated by religion, gender, or the ability to pay. Thus in virtually all of the settlements that confounded the predictions of existing literature by obtaining very high student AT despite low population size or density as compared to Dublin and/or to settlements in their own tier – Baltinglass, Carndonagh, Castlecomer, Dunboyne, Dunshaughlin, to name a few – the common characteristic was the presence of a free, mixed-gender, inter-denominational post-primary school.

AT and school provision in Dublin: an unequal landscape

These findings relate most clearly to Ireland's towns, but also suggest a new approach to adolescent walking and cycling in cities – where, as we have seen, teenagers experienced substantially lower AT than in many smaller settlements. In the Irish townscape, average AT outcomes by population tier did not reflect 'typical' results, but instead masked wildly disparate outcomes between local communities. Thus is it possible that, like the Irish townscape, Ireland's cities are not monoliths for AT but instead are composites of localities where teenagers face considerably different 'odds' of walking or cycling to school? At the same time, recent research on DCC – the most central, urbanised part of Ireland's largest city – already demonstrates stark spatial inequalities in the state's provision of post-primary schools as well as a pronounced lack of inclusive schools. Thus if adolescent AT is markedly lower in some parts of Dublin than in others, can worse relative outcomes in those communities be associated, as they are in Irish towns, with deficiencies in educational provision?

A preliminary answer to the first question may be obtained by considering unpublished Census 2016 commuting data by Electoral Division (ED). Such a consideration for the Dublin city and suburbs settlement area[7] shows that, both within that area and also within the smaller, more densely-populated DCC area, 13- to 18-year-old students experienced significant local differences in commuting outcomes (CSO 2020a). As in Irish towns, in some EDs in the capital over seventy per cent of teenagers commuted by AT, as in Clonskeagh-Belfield (DLR) and Templeogue Village (SDCC) (the top performers outside DCC) and in Merchants Quay E and Clontarf West E (the top performers inside DCC). However in other Dublin EDs students experienced drastically lower 'odds' of walking or cycling than their peers elsewhere. In the ED with the worst outcome in DCC, Kilmainham B, only 11.59% of teenagers commuted by AT – lower than the average for rural villages 500 to less than 1000. Moreover in Dublin city and suburbs outside DCC, teenage student AT fell to under four per cent in Clondalkin-Ballymount (SDCC).

Turning to the second question, my previous research identifies Kilmainham B, in the Inchicore-Kilmainham area of DCC (Dublin 8 SPA), as an area of low and segregated post-primary provision such that in 2016 'the five contiguous EDs of Kilmainham B and C, Inchicore A, and Ushers A and F' had a 'local deficit of 355 [post-primary-school] places', no schools that were not segregated by religion, and no post-primary provision for boys (Mancini 2022, 10).[8] This immediately suggests that in Kilmainham B, poor AT outcomes may have been linked to deficiencies in educational provision (but not to low population density, as Kilmainham B [3133.6/sq km] was nearly twice as densely populated as Clonskeagh-Belfield [1645.4/sq km]). Moreover this association between low/segregated school provision and poor AT outcomes is reinforced by an examination of AT in Inchicore-Kilmainham and adjacent EDs. This shows that four of five Inchicore-Kilmainham EDs ranked in the bottom twenty per cent for AT in DCC and the fifth (Ushers F) ranked in the bottom quarter; and that four additional adjacent EDs also ranked in the bottom quintile (Chapelizod, Phoenix Park) or quarter (Kilmainham A and Ushers B) for AT in DCC. As important, this contiguous 9-ED area comprising Chapelizod-Inchicore-Islandbridge-Kilmainham (like Inchicore-Kilmainham within it) was also an area of low and segregated school provision. In 2016 more 13- to 18-year-old students (826) lived in Chapelizod-Inchicore-Islandbridge-Kilmainham than in all but 32 Irish towns – all of which had a mixed-gender post-primary school and all but one of which had an inclusive school. However in 2016 Chapelizod-Inchicore-Islandbridge-Kilmainham had no post-primary schools that were not segregated by religion and gender, no post-primary provision for boys, and a local deficit of 281 post-primary places. This suggests that the very low odds of walking and cycling experienced by teenagers in Inchicore-Kilmainham and the adjacent areas of Islandbridge and Chapelizod may be associated with deficiencies in educational provision there.

Factors that 'are constant and cannot be changed'

Since the era of Beaumont's *Historic Neighborhood Schools in the Age of Sprawl: Why Johnny Can't Walk to School* (Beaumont and Pianca 2002), international scholars have begun to consider interconnections between decision-making, changes in the educational landscape, and student commuting (see, e.g. Ewing, Schroeer, and Greene 2004; Kouri 1999; Miles, Adelaja, and Wyckoff 2011; Passmore 2002; Schlossberg et al. 2006; Vincent,

Miller, and Dillon 2017). However Irish research has been slow to adopt this approach such that it rejects even the possibility of change in the educational landscape. As Woods et al. stated, 'Distance and time were the most cited reasons for not actively commuting to school. These factors are constant and cannot be changed' (Woods et al. 2010, 120).

This claim may be tested in a general way by considering how decision-making has altered the Irish educational landscape since the claim was made. Between 2010 and 2022 the DES completed 143 major post-primary building projects in communities from Bantry and Buttevant, Co. Cork to Ballinamore, Co. Leitrim (DES 2022, https://colaistepobailbheanntrai.ie/, https://www.buttevantcolaiste.ie/). Clearly such interventions have affected home-school distance at the local level by bringing new facilities such as the McCullough Mulvin-designed Ballinamore Community School (https://mcculloughmulvin.com/projects/ballinamore-community-school) to areas that previously lacked them. But DES investment also has changed the educational landscape on larger scales by (for example) altering the proportion of inclusive schools versus those that are segregated by religion, gender, and/or the ability to pay; by changing the spatial distribution of new state-of-the-art facilities versus older (potentially more-dilapidated/less-well-appointed) schools; and by altering the share of schools sited centrally within cities, towns and villages versus those in peripheral locations. Thus the state increased the proportion of inclusive schools nationally (with a minimum of 12 completions in 2011-2016 of new buildings for inclusive schools established since 2000) but not in all regions (with no such completions in DCC in 2010-2022); invested intensively in new facilities in suburban areas, towns, and villages but not in the most urbanised areas (with only 2 of 143 completions 2010–2022 occurring in DCC, one for an extension and neither for newly-established schools); and increased the share of peripherally-located schools. Indeed, the DES's tendency to build on AT-inaccessible sites outside compact areas of settlement provoked the NTA to issue a caveat to Green Schools, stating that 'the context within which it operates is often highly challenging, particularly in regards to recently-built schools, as the fundamental decisions relating to their location have frequently taken little or no account of accessibility by non-car modes' (NTA [2016], 33).

If all this indicates that DES investment can, in fact, change 'distance to school', it is also possible more specifically to test the claim that *time* to school 'cannot be changed' by comparing commute times 13- to 18-year-old students reported to Census 2016 (CSO 2020a) versus Census 2011 (CSO 2020b). This shows that nationally, teenagers' average commute time remained constant (19 min). However in many EDs where the state completed large-scale post-primary projects in 2011-2016, such averages fell significantly – with the proportionally largest reductions in Donabate ED (26.2–15.7 min) and Leitrim's Garadice ED, where Ballinamore Community School opened in 2014 (18.3–11.5 min). Thus when the state invests in new schools, time to school is *not* constant and *can* be changed – even in places with below-average student commute times.[9]

'Behavioural change interventions' and the right to be heard

These findings clearly suggest that low AT is a problem of educational provision as well as attitudes or behaviour. Nonetheless, many Irish decision-makers emphasise 'behavioural change interventions' as the main or only method of increasing AT. With this in mind, the paper turns to its final aim: evaluating recent policy documents in this area. Do

decision-makers demonstrate a grasp of local adolescent commuting outcomes, including disparities therein? Do they seek data reported by children to analyse children's commuting behaviour? Do they consider the impact of school provision on AT? And do they grant children and communities the right to be heard before imposing 'behavioural change interventions', by offering them the means to report deficiencies in educational provision?

As noted, Irish decision-makers do recognise one aspect of children's 'local' experiences as commuters: their role in producing traffic congestion and increasing the duration of other peoples' commutes. As the NTA stated regarding the GDA,

> For education trips, the school run has become an increasingly important element in traffic congestion across the region, particularly in the morning peak. … School trips are a substantial contributor to local congestion and have a significant impact on travel times by all modes'. (NTA [2016], 31, 33)

Nonetheless, decision-makers rarely have accompanied such statements with specific, local analysis of student commutes. Thus the NTA failed to observe vast differences in commuting outcomes for Irish teenagers even within the GDA: for example that in GDA towns adolescent AT in 2011 ranged from 79.2% in Dunshaughlin to 0.5% in Enniskerry, Co. Wicklow (CSO 2012); or that in some EDs with low AT such as Enniskerry and Kilmainham B, teenagers also had significantly longer average journey times (28.8, 29 min) than teenagers in numerous other GDA EDs such as, for example, Clonskeagh-Belfield (10.9 min), Clontarf West E (13.9 min), and Carnew (11.7 min) (CSO 2020b).

However, the NTA did at least pay some heed to commuting data reported by children, offering several observations on national trends.[10] This was in contrast to other decision-makers including the DES, DTTAS, and DCC, who routinely avoided using children's commuting data. Thus DES new-schools-establishment documentation includes 'demographic details' but not commuting outcomes (DES 2020) – even when the establishment of new schools such as Blackrock ETSS has entailed additional, unusual DES spending on suburban school transport.[11] And thus the DTTAS used Census 2016 data to analyse work commutes but, as noted, for education journeys used 18-and-over data from the National Travel Survey (DTTAS 2020, 25) – while DCC avoided children's commuting data in both the *Strategic Issues Paper* and the 'Community and Social Audits' required by planning regulations. In the former DCC used 'annual canal cordon counts'[12] (DCC 2020, 67) to visualise mode share but presented no data on children's school journeys; while in the latter DCC routinely outsourced reporting on school provision to private consultants (e.g. John Spain Associates 2022) who included very little relevant data – let alone commuting data reported by children.

Decision-makers also have said little about the impact of school provision on AT. Thus while the NTA noted school siting decisions' adverse effect on Green Schools, it did not directly consider how such decisions – or educational underinvestment in parts of DCC and some GDA towns – affected commuting outcomes. And while DCC stated 'that the equitable provision of a range of good quality, fit-for-purpose and easily accessible social infrastructure in existing and developing areas is a key element in the development of sustainable, healthy communities across the City' (DCC, 51), it

failed to take basic steps to ensure such provision, at least with respect to schools. Hence the *Strategic Issues Paper* evidenced no awareness of spatial inequalities in post-primary provision in DCC or of the state's protracted lack of investment in new post-primary schools in some areas. And while its *Strategic Issues Paper* invited the public to make submissions on ten 'themes' including 'The City, Urban Villages and Retail', DCC presented no mechanism for communities to identify deficiencies in educational provision.

Moreover in a context in which the DES claimed to establish new schools solely to accommodate 'increased demographics', it is arguable that DCC actually undercut such investment in Inchicore-Kilmainham by presenting it as a zone of low population growth:

> … from 2011 to 2016, the overall increase in the population of Dublin City was approximately 25,400 people or 4.6%. Population growth … however, was spatially uneven … The lowest proportional increase was in Dublin South Central (+2.5%), which incorporates the neighbourhoods including Liberties, Inchicore, Chapelizod, Ballyfermot, Bluebell, Drimnagh, Rialto and Walkinstown. (DCC 2020, 30)

This statement, it should be noted, overlooked Census data showing that population increase in Inchicore-Kilmainham (14.09%), which accounted for nearly 8% of all growth in DCC in the period, was nearly three times greater than the DCC average.

Conclusion

In Ireland, 13- to 18-year-olds travelling to education comprise nearly 12% of all commuters. However although the promotion of walking and cycling to school aligns with health and climate policy goals such as increasing physical activity and reducing transport emissions, adolescent AT is lower in Ireland than in many European countries. This paper shows that adolescent AT does not follow population size and density but does follow educational provision such that in some towns without secondary schools no teenagers walk or cycle to school, and such that in some Dublin communities with low and/or segregated educational provision, teenagers are six times less likely to commute by AT than teenagers in numerous towns and city neighbourhoods where school provision is higher and/or less segregated. It also shows that the most significant barrier to walking and cycling, excessive home-school distance, can be reduced through state investment in educational facilities. In this way, the paper challenges existing academic literature on school commuting in Ireland that correlates adolescent AT to the population size and density of settlements without considering educational provision or the placement of schools; and that presumes that 'distance and time' to school are factors that 'are constant and cannot be changed'. But the paper also challenges the approach taken by Ireland's decision-makers, who have been quick to impose 'behavioural change' on children and to blame children for traffic congestion – but who have been more reluctant to analyse children's commuting data, to give children or their communities the opportunity to identify deficiencies in school provision and other 'social infrastructure', or to invest in education in a manner that is consistent with spatial equality. Thus if decision-makers truly wish to promote 'the development of sustainable, healthy communities', they must begin by promoting educational equality and the right of children to be heard.

Notes

1. In an adjacent part of Wicklow town (http://colaistechillmhantain.ie/).
2. Mulderrig (2018) argues that in children's health 'nudge' policies employ 'intervention strategies, inspired by behavioural psychology' (39) to 'emotionally manipulate and persuade children and their parents to adopt healthier lifestyles' (39). As she observes, such policies' focus on 'poor lifestyle choices' (43) and 'individualised solutions' (47) often comes at the cost of addressing defects in public infrastructure: 'nudge is cheaper than regulatory and fiscal alternatives, thus making it an attractive complement to austerity policies' (45).
3. In Ireland, post-primary school administration (including admissions/entry) is decentralised (under patronage bodies operating one or more schools and boards of management who manage schools on their behalf), but planning and expenditure are highly centralised (under the Department of Education and Skills [DES]). Despite this centralisation, however, the DES neither requires nor seeks to achieve parity of provision across its 314 school planning areas [SPAs]. Rather, in some SPAs the DES plans for inward commuting/overcapacity at secondary level and in other SPAs it plans for outward commuting/undercapacity (see Mancini 2022, 13–15), as is indicated by its published tables of 'intake ratios' of secondary-to-primary enrolments (see https://www.oireachtas.ie/en/debates/question/2023-07-25/444/#pq_444). These tables (https://data.oireachtas.ie/ie/oireachtas/debates/questions/supportingDocumentation/2023-07-25_pq444-25-07-23_en.xlsx) show that in 2016 the 'intake ratio' in some SPAs was as high as 346% (in Booterstown-Blackrock SPA) and 298.8% (Castleknock-D15 SPA), indicating overcapacity in and inward commuting to those SPAs, whereas in other SPAs the secondary-to-primary 'intake ratio' was below 50% (in, e.g., Dublin 8 SPA [43%], Finglas East-Ballymun SPA [20.2%], Darndale-D17 SPA [0%]), indicating outward commuting from those SPAs (and, most likely, undercapacity, but this is more difficult to gauge directly as the DES does not publish capacity figures; see https://www.oireachtas.ie/en/debates/question/2023-07-13/366/#pq_366). And thus Minister of State at the Department of Education Thomas Byrne, Minister of State with responsibility for Local Government and Planning Kieran O'Donnell, and Minister for Education Norma Foley have each recently maintained that the newly-established Sandymount Park ETSS in the Dublin 2/4 SPA - a school which is nearly 10 km from Dublin 8 SPA's farthest edge and whose 2.5km walkability radius includes no part of the Dublin 8 SPA - was established 'to serve the Dublin 8 school planning area' (https://www.oireachtas.ie/en/debates/debate/seanad/2023-07-04/speech/14/, https://www.oireachtas.ie/en/debates/debate/dail/2023-07-13/37/, https://www.oireachtas.ie/en/debates/question/2023-09-11/601/speech/459/). Moreover since 2011 the DES has established new schools 'only where warranted by increased demographics' – i.e., not to remedy existing deficits but only to accommodate projected future need.
4. For example *Take PART* (Woods et al. 2010; see also Woods et al. 2009), used by Nelson et al. and Nelson and Woods, collected data from 'a cross-sectional cohort of 15–17 yr old adolescents in 61 post-primary schools' (Nelson et al. 2008, 1), omitting other ages and locations; meanwhile the longitudinal *Growing Up in Ireland* used by Murtagh et al. posed questions on commuting to parents of a cohort of children at 9 years (on time, distance, and mode of travel) and 13 years (on distance and mode but not on journey times) while omitting commuting questions from the age-17 parents' questionnaire.
5. School-based: *Take Part* and *CSPPA*. *Growing Up in Ireland* studied children from 'a representative sample of 910 [primary] schools' and thus possibly included children without local post-primary provision. However this cannot be gauged from the study as it did not pose questions about the contours of local post-primary provision; indeed its inclusion of questions on children's post-primary subject *choices* but not on subject *provision* or lack thereof suggests that its designers did not envision provision deficits.
6. In 2016, approximately 53% of Ireland's state-funded post-primary schools were denominational institutions; approximately 34% admitted boys or girls only; and 52 state-funded post-primary schools charged fees (note that DES funding for teacher salaries is apportioned to

fee-charging schools at a slightly lesser rate than to free schools, based on a pupil-teacher ratio of 23:1 versus 19:1). Provision of inclusive schools is proportionally lowest in cities and highest in rural areas (Mancini 2022).

7. This includes DCC and parts of the suburban county council areas of Dún Laoghaire-Rathdown [DLR], Fingal and South Dublin [SDCC].
8. I argue (Mancini, 2022) that such deficits are part of a pattern of unequal post-primary provision that favours Dublin's most socioeconomically-advantaged areas over historically working-class, socioeconomically-mixed areas such as Inchicore-Kilmainham, which in 2016 (in an area of less than 3.5 sq km) had Small Areas in every category of Pobal's 'Deprivation Index' from 'Very Disadvantaged' to 'Highly Affluent' (https://maps.pobal.ie/WebApps/DeprivationIndices/index.html). Such an interpretation is supported by the DES's 'intake ratio' table for 2016 (see note 3), which shows a high incidence of secondary-school overcapacity in the most affluent Dublin SPAs (e.g. Booterstown-Blackrock [346.8%], Castleknock-D15 [298.8%], Dublin 6-Clonskeagh [233.1%], Dublin 6W [190.9%], Dublin 2/4 [152.4%], Goatstown-Stillorgan-DLR [145.6%]). In future this project aims to use GIS to investigate these relationships further and to expand analysis of school provision, student commuting, and other topics. However several impediments to this approach must first be overcome, one of the most significant of which is lack of access to key data – for example, maps of all 314 SPAs. The DES has published only a portion of these and the Minister for Education declined to make them available in 2023 on the grounds that it 'would represent a significant administrative burden to compile' them (https://www.oireachtas.ie/en/debates/question/2023-07-13/367/#pq_367).
9. Note, however, that new-school construction can lower commute times without increasing AT if it occurs outside settlements – as was the case in rural Garadice ED.
10. E.g. stating, 'The number of girls aged 13–18 cycling to school … has fallen from c. 19,000 in 1986 to c. 500 in 2011'.
11. Generally the DES funds only rural school transport. However it has made an exception to this in suburban Blackrock/Booterstown/Dún Laoghaire, where until the completion of permanent facilities for Blackrock ETSS (on the 3-acre, €8m residential site the DES purchased in 2018), 'the Department has agreed to fund a school bus' to temporary premises in Ballsbridge (https://www.blackrocketss.ie/page/Temporary-and-permanent-locations/44959/Index.html, Fagan 2018).
12. Of inbound pedestrians, cyclists, and vehicles 'at 33 locations around the cordon formed by the Royal and Grand Canals' (DCC and NTA 2021, 4).

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