

Planning memo 3

Building the next generation of cyclists

LISA ROHRER & JONAS KAČKUS TYBJERG



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Introduction



Nordic strategies prioritise children but lack clear measures to encourage cycling among older adolescents. Pictured: Students walking with a bike in Uppsala, Sweden.
Magnus Liam Karlsson / imagebank.sweden.se

Cyclists are not a homogenous population group. While studies highlight distinctions between gender or age, there are significant nuances within such groups. When it comes to children, rapid developments from year to year makes it impossible to consider this portion of the population as a unified group, which poses a challenge for planners seeking to encourage young people to cycle through their teenage years and into adulthood. While young children's mobility patterns are heavily influenced by their parents, pre-teens and teenagers, in their growing agency, also gain more freedoms and opportunities to move through their living environments as they choose.

This planning memo focuses on the unique and dynamic aspects of **adolescents in cycling** within the Nordic Region. We provide a review of Nordic-based academic studies on adolescents and their mobility trends and behaviours. This is followed by a summary of how several Nordic cities and regions have considered this age group within their cycling strategies. We also explore some cross-Nordic comparisons with regards to legal age restrictions and other regulations that can be both a support and a barrier to adolescent cyclists and micro-mobility users. The planning memo concludes with several key takeaways for planning and policymaking.

From a review of 26 academic articles, we identified seven main trends with regards to adolescents in cycling: (1) younger adolescents are more likely to cycle compared to older adolescents, (2) time and distance influence adolescent travel behaviour, (3) the built environment influences adolescent travel behaviour, (4) active school transport works when it is also a social activity, (5) the role played by parents is mixed, (6) there is a positive relationship between active transport and health, and (7) traffic and other safety remain concerns for adolescents, but this is not exclusive to cycling.

A review of local cycling strategies shows that, while cities and regions emphasise the importance of children cycling, there remains a lack of definitional clarity for this age group and a gap in initiatives set forth to attract older adolescents to use the bicycle for travelling to school and leisure activities. Even so, common themes emerge across the strategies, including young people's travel to and from educational institutions, children's safety when cycling, and the need to encourage higher levels of cycling among younger populations. In addition, several strategies outline specific projects aimed at promoting

cycling among children and young people, such as school competitions where students gain points for active commuting or cycling education programmes starting at a young age.

During a workshop among Nordic cycling planners, safety and age restrictions were common points of concern that emerged. A cross-Nordic comparison reveals a high degree of variation in national regulations with regards to helmet usage, cycling on sidewalks, and age restrictions for cycling alone or riding an e-scooter. Nordic cities and regions also have a range of local bike and e-scooter sharing systems, most of which are inaccessible to younger adolescents due to age requirements set by private companies. National regulations and ride-sharing company policies also differ within countries and among service providers.

To improve health, reduce negative environmental consequences, and reach modal share goals, cycling planners and policymakers can consider a range of actions in relation to adolescents in cycling. These include improving cycling and walking network density between schools and youth activities as well as promoting and enabling cycling as a social activity among teens. While local strategies account for the unique perspective of younger cyclists, more research is needed to learn how to combat the dip in older adolescents cycling when alternative mobility options are made available, especially when their built environments and culture encourage driving over active mobility. Further research is needed around how planners can enable young people to cycle while maintaining safety among all traffic users, including measuring the impact of national regulations versus private policies for young cyclists and micro-mobility riders.

This is the third publication in a series summarising research and policy concerning bicycle planning in the Nordic countries. With each memo, we provide practitioners, policymakers, researchers, and other actors with insights from academia, highlights from Nordic cycling strategies, and other relevant findings to support informed decision-making for transport planning in the Nordic Region. The content of this memo was developed based on desk research as well as inputs from an online workshop held in February 2026 among the Nordic Cycle Network—a network of practitioners from around 20 cities and regions across Denmark, Finland, Iceland, Norway, and Sweden.

Introduktion (dansk)



Nordiske strategier prioriterer børn, men mangler klare tiltag for at engagere teenagere i daglig cykling. På billedet: Elever trækker deres cykel i Uppsala, Sverige.
Magnus Liam Karlsson / imagebank.sweden.se

Cyklister er ikke en homogen befolkningsgruppe. Selvom undersøgelser ofte fremhæver forskelle mellem køn og alder, findes der betydelige nuancer inden for hver gruppe. Når det gælder børn, sker der så hurtige udviklingspring fra år til år, at det er umuligt at betragte dem som én samlet aldersgruppe. Dette skaber udfordringer for planlæggere, der ønsker at motivere unge til at cykle gennem teenageårene og videre ind i voksenlivet. Mens små børns mobilitetsmønstre i høj grad er påvirket af deres forældre, får præteenagere og teenagere, i takt med deres stigende selvstændighed, også flere friheder og muligheder for at bevæge sig rundt i deres nærmiljø på egne præmisser.

Dette notat fokuserer på de unikke og dynamiske aspekter af **unges cykling** i Norden. Vi giver et overblik over akademiske studier fra Norden om unges mobilitetstendenser og -adfærd. Herefter følger et resumé af, hvordan flere nordiske kommuner og regioner har inddraget denne aldersgruppe i deres cykelstrategier. Vi præsenterer også sammenligninger af aldersgrænser og andre reguleringer i de nordiske lande, som både kan understøtte og skabe barrierer for unge cyklister og brugere af mikromobilitet. Notatet afsluttes med en række centrale pointer til planlægning og politikudvikling.

På baggrund af en gennemgang af 26 akademiske artikler identificerede vi syv hovedtendenser omkring unge og cykling: (1) yngre teenagere cykler oftere end ældre teenagere, (2) tid og afstand påvirker unges rejseadfærd, (3) det byggede miljø påvirker unges rejseadfærd, (4) aktiv skoletransport fungerer bedst, når det også er en social aktivitet, (5) forældres rolle er blandet, (6) der er en positiv sammenhæng mellem aktiv transport og sundhed, og (7) trafik og andre sikkerhedsforhold er fortsat en bekymring for unge, men dette er ikke udelukkende knyttet til cykling.

En gennemgang af lokale cykelstrategier viser, at selvom kommuner og regioner fremhæver betydningen af, at børn cykler, er der fortsat manglende begrebsmæssig klarhed omkring denne aldersgruppe samt et fravær af målrettede initiativer, der skal motivere ældre unge til at bruge cyklen til skole- og fritidsaktiviteter. Ikke desto mindre kan der identificeres gennemgående temaer på tværs af strategierne, herunder unges transport til og fra uddannelsesinstitutioner, børns sikkerhed i trafikken samt behovet for at øge cyklingen blandt yngre aldersgrupper. Derudover beskriver flere strategier konkrete projekter, der har til formål at fremme cykling blandt børn og unge, såsom

skolekonkurrencer, hvor elever optjener point for aktiv transport, eller cykelundervisningsprogrammer, der starter i en tidlig alder.

Under en workshop med nordiske cykelplanlæggere blev sikkerhed og aldersrestriktioner identificeret som centrale bekymringstemaer. En sammenligning af de nordiske lande viser stor variation i nationale regler om brug af cykelhjelme, cykling på fortove samt aldersgrænser for at cykle alene eller køre på e-scooter. Nordiske kommuner og regioner har også forskellige lokale delecykel- og e-scootertjenester, hvoraf de fleste er utilgængelige for yngre teenagere på grund af aldersgrænser fastsat af private virksomheder. Nationale regler og deletransportfirmaers politikker varierer både inden for lande og mellem udbydere.

For at styrke sundhed, reducere negative miljøpåvirkninger og nå modalandelsmålene, kan cykelplanlæggere og beslutningstagere overveje en række tiltag i forhold til unges cykling. Disse tiltag omfatter både at styrke tæthed og sammenhæng i cykel- og gangnetværk mellem skoler og ungdomsaktiviteter samt at fremme og muliggøre cykling som en social aktivitet blandt teenagere. Mens lokale strategier tager højde for yngre cyklisteres særlige perspektiv, er der stadig behov for mere forskning. Det gælder især, hvordan man kan modvirke faldet i cykling blandt ældre teenagere, når alternative transportmuligheder bliver tilgængelige. Problemet er særligt udtalt i områder, hvor det byggede miljø og den lokale kultur fremmer bilkørsel frem for aktiv mobilitet. Der er også behov for yderligere undersøgelser af, hvordan planlæggere kan støtte unges cykling, samtidig med at sikkerheden opretholdes for alle trafikanter. Dette inkluderer blandt andet at måle effekten af nationale regler sammenlignet med private politikker for unge cyklister og brugere af mikromobilitet.

Dette er den tredje publikation i en serie, der opsummerer forskning og politik vedrørende cykelplanlægning i de nordiske lande. Med hver rapport giver vi specialister, beslutningstagere, forskere og andre aktører indblik fra akademisk forskning. Vi fremhæver også højdepunkter fra nordiske cykelstrategier samt andre relevante resultater. Formålet er at understøtte informeret beslutningstagning inden for transportplanlægning i Norden. Indholdet af denne rapport er udviklet på baggrund af desk research samt input fra en online workshop, der blev afholdt i februar 2026 blandt Nordic Cycle Network — et netværk af specialister fra omkring 20 kommuner og regioner i Danmark, Finland, Island, Norge og Sverige.

Insights from academic literature



Cycling as part of everyday routines, such as school travel, can support physical activity and mental health from an early age. Pictured: Young cyclist crossing Cykelslangen in Copenhagen, Denmark. Ricky John Molloy / norden.org

Several studies exploring adolescents in cycling have been made within the Nordic countries. For the purpose of this literature review, we searched for academic articles published since 2015, narrowing the scope to open-access publications from Denmark, Finland, Iceland, Norway, and Sweden. After filtering for relevancy, a total of 26 articles were reviewed.

While transport studies often discuss the sustainability impacts of cycling from an environmental perspective, the academic studies on adolescents tend to focus on *health-related aspects* of cycling. Several articles point out that, globally, four-fifths of adolescents do not get an adequate amount of physical activity (e.g., Bjørnara et al., 2016; Kongsvold et al., 2025; Malnes et al., 2023; Lindqvist et al., 2019). Despite some studies showing that adolescents in Nordic countries are less overweight compared to European neighbours (te Velde et al., 2017;), one Finnish study departs from their national statistics showing 69% of boys and 82% of girls between 11 and 17 years old do not meet global physical activity guidelines (Jussila et al., 2023), and a Norwegian study notes that only 34% of Norwegian adolescents meet the sufficient WHO recommendations for physical activity (Malnes et al., 2023). Some studies also note that active school transport—walking and cycling—“seems to have decreased worldwide in recent decades” (Haug et al., 2021, p. 2; Suominen et al., 2025-a). Thus, much of the research explores how active commuting to school can be an efficient and meaningful solution to these concerns (Suominen et al., 2025-a; Lindqvist et al., 2019). Most of the 26 articles research adolescents’ travel behaviour to and from school using the terms “active school transport,” “active commuting to school,” or “active travel”. They commonly include both cycling and walking within the concept of active commuting, with some studies also including non-motorised scooters (Jingili et al., 2023). These studies also explored a range of variables related to active commuting, most often evaluating the relationship between active commuting and other physical activity or physical health factors (e.g., Malnes et al., 2023; Werkneck et al., 2021; Kallio et al., 2016; Ng et al., 2021; te Velde et al., 2017; Jussila et al., 2023; Haug et al., 2021; Bjørnara et al., 2016).

BOX 1. ADOLESCENTS: A UNIQUE CATEGORY OF CYCLIST

For the purposes of this literature review, we distinguish adolescents from children or adults by focusing on a narrow age range. The articles reviewed define adolescents using various age ranges, stretching from 6 to 24 years old; however, those with larger age ranges were often segmented into smaller ranges, distinguishing children from adolescents, younger adolescents from older adolescents, or adolescents from young adults. The general age of the articles focused on adolescents between 10 and 19 years old. The variation of age range is significant depending on the research question of each study, with some showing great variations between younger and older adolescents based both on development and changing interests between childhood and early adulthood. Others emphasise the new forms of mobility that become accessible to older adolescents (licenses to drive motorbikes or cars) and the effect of this as it pertains to frequency of cycling between, for example, 13–16-year-olds and 16–19-year-olds.

Much of the literature also responds to *safety concerns* among adolescents, with researchers looking at crash data, helmet use, and hospitalisations among cyclists and other modes of transport across age groups (Björnstig et al., 2017; Bojesen & Rayce, 2020; Næss et al., 2020; Seitakari et al., 2025; Unkuri et al., 2024). Though numbers have been decreasing, one study highlights how transport remains a "major cause of mortality among adolescents," in addition to the many non-fatal but serious injuries incurred through traffic collisions (Unkuri et al., 2024, p. 267). A Norwegian study formulates their research in response to the high percentage of serious road injuries related to cycling in Sweden (Næss et al., 2020) and a set of researchers in Denmark base their study on the concern that "adolescents are still over-represented in traffic-related accidents among 0–18 year olds, particularly as moped riders and bicyclists" (Bojesen & Rayce, 2020). One study also responds to the rising increase in e-scooter-related accidents in relation to bicycle injuries in Finland (Seitakari et al., 2025). Aside from analysing crash statistics, one study also takes a qualitative approach by evaluating the effect of traffic safety educational programs on cycling behaviour among adolescents (Bojesen & Rayce, 2020).

Other common themes in the literature were the relationship between active commuting and *the built environment* (Kaplan et al., 2016; Malnes et al., 2025; Timperio et al., 2025; Jingili et al., 2023; Bjørnara et al., 2016; Schön et al., 2024) and *parental influences* on adolescents' school commuting behaviour (Westman et al., 2017; Lindqvist et al., 2019; Jingili et al., 2023). Several authors also evaluated *active commuting across generations* (e.g., Suominen et al., 2025-a; 2025-b) or from adolescent to adulthood (Yang et al., 2025). *Seasonality* was often mentioned in the studies, comparing summer or spring/fall cycling to winter cycling among adolescents (e.g., Kongsvold et al., 2024; Lindqvist et al., 2019). Studies also look at *leisure transport* related to meaningful places for adolescents to congregate or pass through (Sarjala et al., 2015) or transport to and from sports practice (Laxdal et al., 2022).

Seven key messages emerged from the literature, discussed below.

1. Younger adolescents are more likely to cycle compared to older adolescents

In their 2021 study, Haug et al. collected data on health behaviour in school-aged children, conducted at four-year intervals between 2006 and 2018 in four European countries, including Norway. They found a distinction between 11-year-olds and 13–15-year-olds, with the younger adolescents more likely to use active modes of transport to and from school (Haug et al., 2021). In their Finnish-based study, Jussila and colleagues (2023) found that ninth graders were less likely to use active school transport than eighth graders. And in Norway, one traffic-related study revealed a peak in hospitalised cyclists around 14–15 years old, with fewer cycling-related crashes reported among 16–20 years old. They believed this to be the case because there is less of a cycling culture among the older group (Næss et al., 2020). The idea that younger adolescents are more likely to use active forms of transport is also confirmed by Laxdal et al. (2022), who found that adolescents below eligible driving license ages (for motorbikes and cars) are more likely to walk or cycle to their football training sessions. And in their study among several countries including Denmark, Werneck et al. (2021) reported high potential of active travel to school among older adolescents “given their limited cycling patterns” (Werneck et al., 2021, p. 5).

2. Time and distance influence adolescent travel behaviour

In addition to having greater mobility choice due to car or motorbike licensing, one of the reasons that older adolescents may cycle less may be due to their need to transport further distances. The correlation between age and longer travel distances emerged in several studies.

A study based in Finland found that students in upper grades travelled longer distances compared to lower grades, and those living within 5 km of their schools had, in general, greater prevalence of active transport to school (Kallio et al., 2016, p. 3). Haug et al. (2021) also credited the distinction they found between younger and older adolescents to the fact that “secondary schools are typically bigger school units with increased travel distances for most students,” (p. 10). The main finding among survey respondents in Jingili et al. (2023) is that adolescents may be more likely to use active school transport if they lived closer to school.

Fifty-eight percent of the 13–14-year-olds surveyed in Skellefteå (Sweden) reported that a major barrier to walking or cycling to school was that it takes too much time. Contrary to potential assumptions, the researchers found that things like needing to plan ahead, getting tired or sweaty, or having too much stuff to carry were *not* barriers to active school transport among this age group. Another study from Sweden (Lindqvist et al., 2019) also contradicted the notion that the weather was a major barrier for adolescents, instead showing that students appreciated the challenge of the cold or snowy weather once they tried it, and felt a sense of accomplishment when they actively commuted to school. A study in Norway found that when students had less than 5 minutes of travel

time to school they were more likely to engage in active school travel (Haug et al., 2021), and another Norwegian study determined that cycling was most common for students living between 1.6 and 3.3 km from school (with walking being more dominant for shorter distances and motorised travel more common for longer trips; Malnes et al., 2025). Several Finnish studies also confirm that distance is a consistent correlate of active school transport (see Suominen et al., 2025-a; Timperio et al., 2025), with one reporting that the greatest potential to increase cycling is found in short trips between 0 and 3 km (Suomalainen et al., 2024).

Beyond active commuting to school, one study in Southern Norway evaluated travel behaviour of adolescents to and from football practice (Laxdal et al., 2022; see Table 1). The researchers found that, even though around 67% of surveyed adolescents lived within 4 km of their training sessions, the most common mode of transport was the car. Distance to training sessions increased in relation to age, with younger adolescents (13-14 years old) having an average distance of 3.5 km, while older adolescents (18-19 years old) had an average distance of almost 8 km to practice. The researchers found that 60% of adolescents used a bicycle or e-bicycle for distances less than 2 km, but this percentage dropped to 38% for distances between 2 and 6.9 km, and only 4% chose to cycle if the distances was greater than 7 km.

Table 1. Adolescents in Southern Norway: Distance and mode of transport to football practice. (Source: Laxdal et al., 2022)

		N	%	Distance (km)		Mode of transport (%)							Passive/Active (%)	
				Mean	Median	Walk	Bike	E-Bike	E-Scooter	Bus	Car	Motorbike	Passive	Active
All		588	100	4.9	3.0	8	29	9	2	3	39	11	55	45
Sex	Boys	398	68	4.9	3.0	9	30	5	2	4	39	11	56	44
	Girls	190	32	5.0	3.0	5	26	16	3	2	37	10	52	48
Age (years)	13-14	140	24	3.5	2.0	8	41	13	4		34		38	62
	15	149	25	4.7	3.0	6	33	9	5	2	45		51	49
	16	118	20	4.1	3.0	8	25	14		4	30	19	53	47
	17	118	20	6.1	3.0	9	18	4	1	7	32	31	70	30
	18-19	63	11	7.9	5.0	10	16		2	3	64	5	74	26
Ethnicity	Native	522	89	4.6	3.0	7	29	10	3	2	39	12	55	45
	Immigrant background	66	11	7.1	3.0	14	29	2	2	14	40	0	56	44
Travel distance	Less than 2 km	150	27	0.8	1.0	23	51	9	1	1	9	6	17	83
	2 to 6.9 km	298	54	3.4	3.0	2	26	12	3	2	42	13	60	40
	7 km or more	102	19	15.0	10.0	1	3	1	2	10	74	10	95	5
Socio-economic status	Low	275	47	4.8	3.0	10	28	7	2	5	40	9	55	45
	High	313	53	5.0	3.0	6	29	11	3	1	38	12	54	46

The findings confirm a point raised several years earlier by Norwegian-based researchers: "Regarding youth leisure activities, those conducted locally and in sport clubs in the neighbourhood, allowing children and adolescents to walk or bicycle to their activities, would be advantageous" (Bjørnara et al., 2016, p. 368).

3. The built environment influences adolescent travel behaviour

Time and distance are not the only significant factors. Spatial factors within the built environment influence adolescent travel behaviour, which is an area where planners and policymakers could play a key role. Bjørnara et al. (2016) note the "importance of building and spatial planning facilitating physical activity in the local community, as a means to increase daily levels of physical activity" (p. 368). Kaplan et al. (2016) found that younger adolescents are more likely to use active modes of travel if the amount and density of car traffic decreased and if conflict points at intersections were reduced. "Street buffer measures are significantly associated with cycling likelihood ... while shorter distances are associated with a higher likelihood of walking" (Kaplan et al., 2016, p. 60). A Southern Norwegian study looking at environmental characteristics in relation to adolescents' school travel mode found that elements like bus transit lines, streetlights, flatter terrain, and high urban centrality were all linked to increased walking and cycling, particularly for trips over 2 km (Malnes et al., 2025). Furthermore, an international study which featured Odense, Denmark, confirmed that "the provision of environments that support walking and cycling is critical to realise sustained population-wide [health] improvements," and "distance to school, diversity in land uses, accessibility/walking facilities, and traffic and crime-related safety among those living further from school, were important supportive correlates of active transport to school" (Timperio et al., 2025, p. 19).

Schön et al. (2024) found that active transport to school is linked to something called "route betweenness"—a measure to assess the connectivity of shortest routes as well as the link density among pedestrians and cyclists. The nuance measurement involves not only the length of the route but also the potential to meet other people along the route.

Route betweenness showed significant and positive associations with active transport to school in most adjusted models. For the shortest route to school, route betweenness proxies the number of links that an adolescent theoretically shares with the flow of a city's population travelling through the network. Route betweenness is also a connectivity measure, as routes have high route betweenness when they pass through or start/end at locations with dense, well-connected networks and high trip generation. (Schön et al., 2024, p. 2157)

The researchers encourage urban planners to consider this measure, particularly "when planning new schools outside central city locations or when evaluating properties of networks around existing schools" (Schön et al., 2024, p. 2159). Schön and colleagues also note a negative relationship between rural areas and active transport among adolescents, which is also noted by Kaplan et al. (2016).

In their Finnish-based study, Sarjala et al. (2016) explore how the physical environment affects physical activity among students at 16 comprehensive schools in the Helsinki

region. Their overarching question of the research was: "How do we design a city that encourages people to use their muscles for moving, and how do we avoid making built environments that do the opposite?" (Sarjala et al., 2016, p.87). The study participants—fifth-graders (23%) and eighth-graders (77%)—used a participatory GIS tool where they could indicate meaningful spaces and their qualities (both positive and negative), including if a space was good for "moving around: walking, running, biking, bushwalking" or other such things. With regards to the physical environment, the study considered variables related to transportation systems, land-use patterns, and urban design characteristics. In the end, they found that most of the students (67%) used active transportation to travel to the meaningful places they marked on the map, and they were located in close proximity (more than half within 1 km) to the participants' home. The meaningful spaces were often in green environments, single-family housing areas, or areas with apartment buildings. The research concluded: "together with the fact that distance from home is the most consistent negative correlate of active transportation of children, it is evident that central environments with mixed land use are less likely to be travelled to on foot or by bicycle than are residential environments where the children mainly live" (Sarjala et al., 2016, p. 99).

4. Active school transport works when it is also a social activity

Sarjala's Finnish study on meaningful places for adolescents mentioned that many meaningful places are visited with friends. This social aspect of active transport is taken up in several other studies. For example, researchers conducted a study in Umeå, Sweden, among students (12-13 years old) and their parents about active school transport in the winter season to understand perceived self-efficacy, the "fundamental belief in the individual's ability to achieve a goal" (Lindqvist et al., 2019, p.2). Through a co-creative methodology involving multiple interventions, the study developed and then tested perceptions and effects of active school transport among the students during the winter season. Undertaking active transport as a school project encouraged togetherness and acted as a major motivator among the classmates (Lindqvist et al., 2019). Walking or cycling with friends was highly valued by the participants to make walking and cycling more fun. A Norwegian study among 14–15-year-olds also found that living near peers was associated with increased walking and cycling to school, particularly among girls (Malnes et al., 2025).

5. The role played by parents is mixed

Adolescents are an interesting group to study due to their age range passing from high dependency on parents for transport to greater agency as they get older. But the variety of studies report a mixed view of parental influence. One study suggests that adolescents perceive parents as gatekeepers to cycling (Lindqvist et al., 2019), while another reports adolescents perceiving that they have full autonomy of their choice to cycle or walk to school (Jingili et al., 2023).

In a study from Värmland (Sweden), researchers sampled parents of school-aged children (10-15 years old) to learn the reasons why parents chose to drive their children to school (Westman et al., 2017). The study showed that "social convenience has a direct

relationship with the frequency of car use indicating that the wish to accompany the child and the convenience of car impacts on car choice" (p.1). In this context, social convenience includes "conveniently going that way and accompaniment by a parent/adult" (p. 5). In instances when the child was not allowed to travel independently, parents choose to drive their child with the car, regardless of distance.

However, several studies concluded that there is a symbiotic relationship between adolescent and parent cycling. Lindqvist et al. (2019) involved both parents and their teenage children in their study of active school transport during the winter. They note that parents initially expressed concern for children cycling in the winter conditions, and had reasons to prevent their children from cycling since the school was close by (on average 1.3 km) or presuming it was dangerous to cycle. However, "after the completion of the project, all of the parents of the children who cycled during winter were positive" (p. 7). One parent reported a change in perspective around the safety of cycling, realizing it was just as safe to cycle in the winter as summer, and others noted their own increased use and investment in cycling due to their child's cycling activity.

There are also some correlations found between parents with high levels of physical activity and the likelihood of their children actively commuting to school, suggesting that promoting physical activity among adults could be a way to encourage more adolescents to use active modes of travel (Suominen et al., 2025-a). And in their study among adolescents in Skellefteå, Jingili et al. (2023) learned that adolescents felt supported by both their parents and the school with regards to active school transport. Most perceived that their parents think they should use active school transport, and 50% said that their parents use active transport frequently themselves. The Finnish study from Suominen et al. (2025-b) evaluated whether "parents' active commuting to school during their youth was associated with their offspring's active commuting to school at similar ages" using the Cardiovascular Risk in Young Finns study data. The findings showed that active commuting to school in the first generation were "directly associated" with active commuting to school in the next. According to the authors, "this intergenerational link could inform public health initiatives to foster sustainable and healthy commuting behaviours that benefit current and future generations," and "ensuring accessible distances to school remains important" to make such active commutes possible (Suominen et al., 2025-b, p. 745).

6. There is a positive relationship between active transport and health

Due to low levels of physical activity among adolescents, Kongsvold et al. (2024) study how adolescents (as well as adults) can increase health through activities in their daily routines. They note that only 31.5% of adolescents (age 13-19 years old) in their study area of Nord-Trøndelag (Norway) met the minimum WHO recommendations for moderate to vigorous physical activity, and girls performed worse than boys. This trend across genders was reflected in the other age groups as well, and proportions were lower in winter months. The researchers used accelerometers to measure moderate-to-vigorous physical activity, finding an "age-related decrease in moderate-to-vigorous physical activity from adolescence to early adulthood and from middle to older adulthood" (p. 4). Their findings point to the significant positive health effects that walking as well as cycling could have for physical activity levels among all age groups, including and especially adolescents.

In a Swedish-based study, students age 13-14 years old reported that walking or cycling to school was a good way to exercise (Jingili et al., 2023). And an international study which included Denmark found that active transport to school is significant for maintaining moderate and vigorous physical activity intensities in adolescents (Werneck et al., 2021). From Finland, Yang et al. (2025) studied the trajectories of adolescents from childhood to midlife. They found that "over half of men and one-third of women continue passive commuting behaviours throughout adulthood" but "childhood active commuting can be a valuable indicator for identifying individuals to maintain active commuting into adulthood, which may lead to physical health outcomes" (Yang et al., 2025, p. 2202; p. 2203).

A Finnish-based study also looked at the potential for active school transport to contribute to physical activity levels among 10-16-year-olds, learning that there is great potential for increasing students' physical activity "by getting the passive commuters to walk or cycle to school" especially during winter and among students who live between 1 and 5 km from school (Kallio et al., 2016, p. 4). "The students living 1.1-3.0 km from school would increase their daily activity on average by 53 minutes if they were to walk to school and by 24 minutes if they were to use their bikes. The corresponding increases in physical activity for the students living 3.1-5.0 km from school would be on average 107 minutes by walking and 48 minutes by cycling" (Kallio et al., 2016, pp. 4-5).

Furthermore, Bjørnara et al. (2016) introduce the concept of sustainable physical activity, highlighting the ways that poor health such as obesity is unsustainable and how active transport can contribute as a carbon-friendly means of transport while simultaneously improving levels of physical activity—among children, adolescents, and adults. Haug et al. (2021) have also reviewed the literature and found a "positive relationship between active school transport and levels of physical activity" (p. 1). When it comes to making improvements, Malnes et al. (2023) tested the effects of adding physical education activities during the school week to see if this would increase levels of active school transport. However, the results indicated that "most participants [91%] maintained their travel habits. Only 6% of pupils switched to motorized travel and 3% switched to active travel, with small variations according to season and trip direction. The intervention [of adding 120 minutes per week of physical education/activity] did not seem to influence the likelihood of changing travel mode" (Malnes et al., 2023, p. 1).

Jussila et al. (2023) found some relationship between active school transport and both physical and mental health. They report that "students who did not use active school transport were ... more likely to be ... users of alcohol and snus, consumed breakfast with greater inconsistency, were overweight" among other factors (p. 889). There was also a correlation between those who did not use active transport and those who did not engage in leisure time physical activity. Jussila et al. (2023) also found that walking and cycling for 10-30 minutes per day was associated with the greatest odds of high academic performance. There was a positive correlation between those who engaged with active school transport and competency of concentration in the classroom, reading, writing, and mathematics. The authors thus report: "there is a need to increase the use of active, sustainable transport modes for public health" (p. 889). The mental health aspects were also raised in Lindqvist et al. (2019), with students self-reporting that they felt healthier and had better mood, concentration and alertness after using active transport modes to school, plus the developed friendly attitudes towards the environment.

7. Traffic and other safety remain concerns for adolescents, but this is not an issue exclusive to cycling

Safety is a key point of departure for several studies on adolescents and cycling in the Nordic Region, with research dedicated to comparing crashes across age groups and evaluating factors such as helmet use or comparing cycling fatalities to traffic fatalities from other modes of transport.

In their study of hospitalised cyclists, Næss et al. (2020) considered age as well as other factors like helmet use, type of crash, and whether alcohol was involved. While not limited to studying adolescents, the results showed a peak of hospitalised cyclists around age 14 to 15 years old, which then decreased significantly between ages 16 and 20. "The lower number of victims in the age group 16–19 years is consistent with data from the OAEOC and may be explained by a non-bicyclist culture for this age group in South-East Norway" (p. 5).

Seitakari and colleagues (2025) compare crash statistics between electric scooters and bicycles in Finland. They find some discrepancies between crashes among 16–20-year-olds and 20–25-year-olds in comparison to older age categories. In these younger categories, the number of accidents with patient injuries from e-scooters outnumbers those from bicycles, while the opposite is the case in all other categories.

E-scooter riders were younger, more often intoxicated, and more likely to ride without a helmet when compared to injured bicycle riders. Although there were fewer e-scooter accidents than bicycle accidents, e-scooters had a 3.6 times higher risk of sustaining an injury requiring [emergency department care] when considering the number of trips made. ... In addition, a greater proportion of e-scooter accidents occurred during nighttime than bicycle accidents. (Seitakari et al., 2025, p. 5)

In their study of injury data in Umeå, Sweden, Björnstig and colleagues (2017) sought to determine how vehicle-related injuries burden the medical sector. According to 2013 data, they found that cyclists were the most frequently injured (compared to car occupants or motorised two-wheel vehicle riders, and pedestrians) and, of the 1085 injury incidences, more than half were younger than 30, with the highest numbers coming from men in the range of 10-29 years old. The study also highlights Sweden's bicycle helmet laws, introduced in 2005 for children under 15 to wear a helmet. They suggest that "a bicycle helmet law for all ages would have great potential to reduce human suffering and the burden on hospital beds for bicyclists" (Björnstig et al., 2017, p. 7).

Unkuri and colleagues (2024) evaluated fatal accidents involving adolescents (10 to 24 years old) from bicycles, mopeds, and motorcycles. Cyclists made up the fewest of these fatalities (20 of the 147 in the 12-year period from 2008 to 2019). Most of the accidents involved males, and many with vehicles of poor condition. Head injuries were the most common cause of death in all the fatalities (62%). The cause of the accidents among most of the bicycle and moped rider fatalities were due to collisions with another vehicle. Of the 20 bicycle fatalities, 90% were not wearing a helmet, and the two who wore a

helmet were not properly attached. Just under half of the accidents took place in an urban context. The article also reports that all the bicycles in the crashes lacked proper lights (though most of the crashes happened in daylight hours). Most of the bicycle and moped rider fatalities were due to collisions with another vehicle (Unkuri et al., 2023).

Traffic safety (from other modes of transport like cars) is also noted as a key criterion for enabling safe active school transport among adolescents (Schön et al., 2024). In their Danish study of 10–15-year-olds in the Capital Region, Kaplan et al. (2016) concludes that “higher car and heavy vehicle traffic densities, as well as higher crash densities, are related negatively to the probability of cycling” (p. 61). In their Swedish-based study, Westman et al. (2017) conclude that, while policies aim to increase safety along roads, initiatives must also address barriers for getting adolescents to cycle outside of safety, such as the convenience for parents to drive their children to school. At the same time, concerns about safety were also raised in research that involved parents’ perceptions or influences on adolescents cycling to school (e.g., Lindqvist et al., 2019), which could be a reason for choosing to drive them.

Responding to the concern of traffic injuries among adolescents, Bojesen & Rayce (2020) evaluated the effects of traffic safety programs among lower secondary school students in Denmark. The study involved implementing a road safety educational program among adolescents (aged 13 to 17 years old) across 57 schools in Denmark. It aimed to “increase knowledge of risk factors, improv[e] attitudes towards risk-taking behaviours related to traffic, [and] promote safe behaviours in traffic” (p. 2). The program was structured around an ambassador—an adult road accident survivor—who shared his or her story, followed by Q&A and reflection exercises among the students. The researchers found that, while the traffic safety program had a “positive effect on the students’ abilities to identify the three most important risk factors in traffic,” there were limited effects on adolescents’ traffic safety behaviour (p. 5). “A small positive effect was found on a single cycle item: helmet use” (p. 7). However, the baseline study indicated that relatively few of the adolescents used a helmet prior to the intervention. Overall, they conclude that “knowledge of risk factors in traffic is a prerequisite for change but does not necessarily translate into safer cycling behaviour and seatbelt use in a population of young pre-drivers” (p. 8).

Beyond traffic safety, one international study including Denmark found that crime-related safety was also an important supportive correlate of active school transport (Timperio et al., 2025).

Nordic cycling strategies



Nordic cities highlight that children's cycling habits tend to influence parents, and the other way around. Pictured: Parent and child commuting together by bike in a Danish city.

Aleksandar Nakic / iStock

As highlighted in several cycling strategies, cyclists do not constitute a homogeneous group of travellers, which necessitates policies that address more vulnerable bicycle users (Bergen kommune, 2020; Gothenburg Traffic Office, 2015). Children and young people represent target groups that require tailored measures. A review of cycling strategies from participating municipalities and regions within the Nordic Cycle Network^[1] reveals that youth-related issues are discussed. Municipal strategies place significantly greater emphasis on children and young people than regional strategies. However, definitions of what constitutes a "child" or a "young person" are often unclear and unspecified. Despite this lack of definitional clarity, common themes emerge across strategies, including young people's travel to and from educational institutions, child safety when cycling, and the need to encourage higher levels of cycling among younger populations. In addition, several strategies outline specific initiatives aimed at promoting cycling among children and young people. While strategies note the importance of enabling young people to cycle, planners underline that encouraging youth to cycle remains a challenge in their work.^[2]

Cycling safety for young cyclists

According to Aarhus statistics, youth aged 21 to 30 are at the highest risk of being involved in a cycling accident (Aarhus kommune, 2017). In Oslo, a survey of school principals found that one in three believed traffic safety around their school was poor, leading them to ban cycling. Moreover, analysis indicates that 57% of Oslo's children cannot reach their schools from home via safe traffic routes (Oslo kommune, 2015). Cycling strategies emphasize that ensuring the safety of children and young people is crucial, as it not only protects new participants in traffic but can also encourage more youth to cycle (Stockholms stad, 2022). Statistics from Copenhagen, Aarhus, and other municipalities further demonstrate that perceived safety is strongly linked to willingness to use a bicycle for daily travel (Aarhus kommune, 2017; City of Copenhagen, 2011).

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1. Cities and regions involved in the network and in this report include Aarhus, Copenhagen, Roskilde, Capital Region, and Region Midtjylland (Denmark); Helsinki, Tampere, Helsinki Region (Finland); Reykjavik, Capital Region (Iceland); Bergen, Oslo (Norway); Gothenburg, Helsingborg, Malmö, Örebro, Stockholm, Region Stockholm, Region Skåne (Sweden).
 2. Several barriers linked to cycling culture, safety, the built environment, and social limitations were discussed in the "adolescents in cycling" workshop among planners in the Nordic Cycle Network, February 2026.

Cycling safety for children and young people can be enhanced through targeted planning initiatives. Aarhus' cycling strategy highlights that children cycle to and from school for approximately 3 months per year in the dark, making adequate lighting along the cycling network essential. The City has also introduced School Street Zones (*Skolegadezoner*) around selected schools to prioritise children and improve their safety (Aarhus kommune, 2017). Similarly, Bergen emphasizes planning that ensures cycling is both safe and perceived as safe. The City works with Heart Zones (*Hjertesoner*), an initiative which promotes safe travel to school by addressing areas near schools through complementary measures beyond those described in the cycling strategy (Bergen kommune, 2020).

Some traffic safety strategies are developed by schools themselves. For instance, in Roskilde, three pilot schools were selected to test their own traffic policy initiatives which were aimed at making cycling around schools feel safer. According to the strategy, parents that drive their children to school by cars are usually at fault for creating feelings of unsafety around schools, and the school-made traffic policies are aimed at addressing this issue (Roskilde kommune, 2017).

Cycling infrastructure planning for young cyclists

Some cycling strategies provide more detailed guidance on planning for youth cycling safety, highlighting that the cycling environment should be adapted to the needs of children and young people. The City of Gothenburg writes that, as a principle, the planning and development of the cycling network should be made in such a way that children between 10 and 12 years old could cycle independently. For example, providing separated cycling lanes and reducing car speeds to 30 km/h at points where lanes merge can help ensure the safety of children (Gothenburg Traffic Office, 2015). For young people, traffic environments should be easily understandable. For instance, intersections should clearly indicate the continuation of cycling lanes after the crossing to avoid confusion.

According to Copenhagen's cycling strategy, it is crucial to consider that children often cycle alongside their parents, meaning that cycling infrastructure should allow cyclists to ride alongside each other (City of Copenhagen, 2011). In addition, the City of Gothenburg also suggests adequate lane widths since children can feel unsafe cycling on narrow lanes and it enables other cyclists to pass younger cyclists more smoothly (Gothenburg Traffic Office, 2015). Both Reykjavík and Aarhus discuss the need for improving facilities, such as bicycle parking near schools, to encourage young people to cycle more (Aarhus kommune, 2017; City of Reykjavík, 2021).

Introducing and supporting cycling for young people

Introducing cycling to young people is a critical aspect of increasing cyclists. Therefore, cycling strategies also discuss the importance of encouraging young people to cycle more. For instance, one of Oslo's goals is to have the share of young people and children who walk or cycle to school reach 90%. However, according to the city's evaluations, only 15% of children cycle to school during summer and nearly 9 out of 10 schools have no initiatives promoting cycling (at the time of the strategy's publication). Additionally, only half of the schools teach about traffic rules, despite such education being compulsory in the

curriculum. Activities that should be developed, according to the strategy, include making biking playgrounds, cycling in groups, and various campaigns (Oslo kommune, 2015).

A survey conducted in Bergen examined the travel habits of children aged 6 to 17, based on responses from parents. The results are disaggregated into three age groups: 6–9, 10–13, and 14–17 years old. Walking emerges as the most common mode of travel across all groups. Being driven by car is most prevalent among the youngest children and declines with age. Cycling is most common in the 10–13 age group and least common among those aged 14–17 years old (Bergen kommune, 2020). These findings underscore the need for continuous initiatives to encourage cycling among young people and suggest that strategies related to education and motivation should be tailored to different age groups.

Transport habits are established at an early age. Therefore, children who are used to cycling from a young age are more likely to cycle when they become older. They can also become better at navigating through traffic and support their health (City of Copenhagen, 2011; Roskilde kommune, 2017; Stockholms stad, 2022). According to a survey cited by Reykjavík, children whose parents cycle are more likely to cycle themselves (City of Reykjavík, 2021). Roskilde also notes that when children cycle more, their parents tend to cycle more as well (Roskilde kommune, 2017).

To build a well-functioning culture of cycling, cities introduce different communication and education initiatives. According to Bergen, such education should include training with equipment checks and practical knowledge of traffic. As Region Stockholm notes in its strategy, communication initiatives should be directed to a specific target group of young people, while Aarhus introduced the Aarhus Cykelby^[3] branding in schools for children to be aware of the campaign (Aarhus kommune, 2017; Region Stockholm, 2014)

Initiatives to promote cycling among children and young people

To both educate and encourage young people to cycle, municipalities have developed a range of initiatives. For instance, Roskilde, together with other municipalities, participated in the Cykelscore system in which a chip was attached to a child's bicycle. When they passed a checkpoint, the movement was registered through a sensor and granted the cyclist one point. The more checkpoints the children passed, the more points they could accumulate. Then, through a website, a school class could follow who had cycled the most. Through healthy competition, such initiatives motivate children to cycle more. Based on the experiences of schools, Cykelscore leads to more people cycling, and over half of them cycle more than they usually do (Roskilde kommune, 2017). The City also introduced a cycling initiative directed towards younger children, called Bicycle-friendly Kindergarten (*Cykelglad børnehave*). Each institution received a starting package for cycling games and, in some cases, several bicycles with which the teachers would teach the children to cycle. In addition, cycling games (*Cykelleg*) were developed where teachers and parents can teach their children to ride bikes while playing a variety of games.^[4]

3. See *Planning memo 2: Data, communication, and political advocacy* for more information about Aarhus Cykelby brand.

4. See <https://www.roskilde.dk/da-dk/service-og-selvbetjening/borger/trafik-veje-og-parkering/cyklist-i-roskilde-kommune/cykellej/>

Helsingborg also has several unique initiatives directed towards young people. What started as an initiative Take Me to School (*Tar mig till skolan*) for children aged 7-8 has since become On Your Own Feet (*På egna ben*) for older kids aged 10-12 (*På egna ben*, n.d.). Both initiatives are a form of competition between schools that encourages students to commute by walking or cycling. In addition, the schools have different activities related to traffic, such as allowing students to test their knowledge at the children's traffic school or learn about traffic rules. On Your Own Feet is organised by the regional traffic authority Västtrafik, with participating schools from Västra Götaland and Halland counties (plus a few schools in Eslöv and Lund in Skåne).

School Travel Plan (*Skolseplan*) was a project carried out in collaboration with schools in Helsingborg. The project mapped trips to and from schools, identified travel issues within these trips, and developed better conditions for sustainable and healthier transport. This work was carried out between the school personnel, parents, and students to encourage the students to learn more about traffic safety, reduce car usage, and improve physical activity. Around 1-2 schools used to participate in the initiative every year. While the project is no longer active, the municipality still provides support to schools that initiate contact on their own (City Planning Helsingborg Committee, 2017).

Finally, the Bicycle Driving Licence (*cykelkörkort*) was an initiative in Helsingborg which aimed to inspire students to become more avid cyclists, making the experience more enjoyable and safer. The participating students learned about the traffic rules. After passing the theoretical and practical exams, the students would receive a symbolic bicycle driving licence (City Planning Helsingborg Committee, 2017). While the city no longer issues bicycle licenses for kids as before, children can still test their traffic safety knowledge at the Children Traffic School (*Barntrafikskolan*) (Helsingborg stad, 2025).

These initiatives (summarised in Table 2) show that several Nordic cities have made efforts to educate and encourage young people to develop cycling habits, especially when travelling to and from school. However, based on the reviewed municipal and regional policies, most of the projects target younger school children, suggesting a gap when it comes to creative methods for improving cycling rates among older adolescents. According to findings in the academic literature, cities and regions may consider targeted initiatives that incentivise and enable older students to continue active commuting, especially as other less environmental- and health-friendly modes of transport are made possible.

Table 2. Overview of cycling-related initiatives for children and young people.

Initiative	Municipality	Target group	Measures
School Street Zones (<i>Skolegadezoner</i>)	Aarhus	School children	Streets prioritise school children
Heart Zones (<i>Hjertesoner</i>)	Bergen	School children	A car free zone around schools
Bicycle Score (<i>Cykelscore</i>)	Roskilde	Children, young people and adults	Cycling competition through a point-tracking system
Bicycle-friendly Kindergarten (<i>Cykelglad børnehave</i>)	Roskilde	Children	Educational cycling games
Take Me to School (<i>Tar mig till skolan</i>), now On Your Own Feet (<i>På egna ben</i>)	Helsingborg	Children	Competition to cycle more
School Travel Plan (<i>Skolreseplan</i>) – discontinued	Helsingborg	School staff, parents, students	Developing travel plans to and from schools
Bicycle Driving License (<i>Cykelkörkort</i>) – discontinued	Helsingborg	Children	Theoretical and practical exercises about traffic rules
Children Traffic School (<i>Barntrafikskolan</i>)	Helsingborg	Children	Theoretical and practical exercises about traffic rules

Cross-Nordic comparisons: National and local regulations related to adolescents



Rules and regulations vary on, for example, electric scooters, helmet use, or cycling on sidewalks. Pictured: Teenager riding an e-scooter in Stavanger, Norway. Gustavo Muñoz Soriano / iStock.

National laws related to cycling and age

During the Nordic Cycle Network workshop about adolescents, several points emerged with regards to traffic safety, particularly when it comes to traffic laws and helmet use among young people. As noted in *Planning memo 2: Data, communication, and political advocacy* (Rohrer & Kačkus Tybjerg, 2026), many communication strategies focus on traffic safety for children, and there is some debate on whether policy is the appropriate way to encourage safer transport (compared to, or alongside, other alternatives such as changes in the built environment that support safe cycling).

Across the Nordic countries, national-level regulations vary on helmet use as well as other safety-related measures like permission to cycle on the sidewalk and age requirements for cycling alone (see Table 3). For example, in Finland, helmets are required for all cyclists, whereas in Sweden, helmets are only required for children under 15 years old. Iceland is similar to Sweden in this regard (children under 16 years old must wear a helmet), while Denmark and Norway, on the other hand, have no helmet requirements regardless of age. All the countries, however, have a helmet requirement for riding e-scooters. While most Nordic countries do not allow cycling or riding an e-scooter on a sidewalk, Norway permits them, and Iceland permits them if a parallel path for cyclists is unavailable. In Finland and Sweden, only children up to a certain age can cycle on the sidewalk (up to 12 and 8 years old, respectively). The association between age and sidewalk cycling may be due to perceived safety concerns for younger cyclists, who travel at speeds relative to walking compared to cycle path users. The countries also have various age limitations for cycling alone—from 6 years old in Denmark to 9 years old in Iceland. In contrast, Finland, Norway, and Sweden do not have specific age requirements for cycling alone. However, this is not the case for e-scooters, which have legal age restrictions in all Nordic countries except for Sweden, whether riding alone or not.

Table 3. Nordic laws for wearing a helmet, cycling on the sidewalk, and cycling alone.

	Is there a national law requiring the use of a helmet?	Is there a national law allowing one to cycle on the sidewalk?	Is there a minimum age for cycling alone?
Denmark ^[5]	Bicycles and e-bikes (up to 25 km/h): No helmet requirement E-scooters: Yes, helmets required (penalty of 1500 DKK)	Bicycles: Forbidden to ride on sidewalk E-scooters: Forbidden to ride on sidewalk	Bicycles: Children under 6 years old must be accompanied by someone 15 years or older. E-scooters: Children under 15 years old must be accompanied by an adult (18 years or older)
Finland ^[6]	Bicycles: Yes, helmets required (but no penalties) E-scooters: Yes, helmets required (but no penalties)	Bicycles: Forbidden to ride on sidewalk, except for children under 12 years old E-scooters: Forbidden on sidewalk	Bicycles: No age restriction E-scooters: driver must be 15 years old
Iceland ^[7]	Bicycles: Yes, helmets required for children under 16 years old E-scooters (up to 25 km/h): Yes, helmets required for children under 16 years old (penalty of 20 000 ISK)	Bicycles: Allowed to ride on sidewalk if no bicycle path is parallel E-scooters: Allowed to ride on sidewalk if no bicycle path is parallel	Bicycles: Children under 9 years old must be accompanied by someone 15 years or older E-scooters: Children must be 13 years old to ride an e-scooter (penalty of 20 000 ISK)
Norway ^[8]	Bicycles: No helmet requirement E-scooters (up to 20 km/h): Yes, helmets required for children under 15 years old	Bicycles: Allowed to ride on sidewalk E-scooters: Allowed to ride on sidewalk	Bicycles: No age restriction E-scooters: driver must be 12 years old
Sweden ^[9]	Bicycles: Yes, helmets required for children under 15 years old (penalty for adults if they are accompanying a child without a helmet) E-scooters (up to 20 km/h): Yes, helmets required for children under 15 years old	Bicycles: Forbidden to ride on sidewalk, except for children under 8 years old (penalty of 500 SEK) E-scooters: Forbidden to ride on sidewalk	Bicycles: No age restriction E-scooters: No age restriction

Bicycle and e-scooter share services

Bike share programs are often considered a strong enabler for increased cycling. However, age limitations of bike share programs, while encouraging safe ridership, may also be a barrier to enabling adolescents to cycle. Almost all cities in the network have a local bike-share system or agreements with private companies who have permission to operate bicycles or e-scooters in the city. While they must abide by national regulations, many private companies—such as Donkey Republic, Voi, Lime, CityBike, or Bolt—also have their own requirements for ensuring safe riding. In places like Sweden where no age restrictions exist for e-scooters, this means that private companies hold the responsibility for enforcing their own age restrictions (18 years old for the e-scooter sharing companies

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5. See Rådet for sikker trafik (n.d.); Cyklistforbundet (n.d.)
 6. See Finnish Road Safety Council Liikenneturva (n.d.); Yle (2025).
 7. See Island.is (n.d.); Althingi (2019).
 8. See Statens vegvesen (n.d.); DSB (n.d.)
 9. See Your Europe (2024); Land (2019); Transportstyrelsen (2025, 2026).

Bolt, Voi, and Lime; Bolt, n.d.; Voi, n.d.; Lime., n.d.). Whether age restrictions should be set by companies, the state, or parents themselves is up for debate, and it remains unclear whether unification between public and private actors can have a significant impact. Further studies comparing Denmark and Finland (where helmets are required for all e-scooter riders, regardless of age) to, for example, Iceland, Norway, and Sweden (where requirements only exist under specific ages) could help to identify whether shared requirements across actors enable higher likelihood of abiding by safety rules, as well as whether such rules have a noticeable effect on the overall safety of cyclists, e-scooter riders, and others.

The common age limit for most bicycle and e-scooter subscription services in the Nordic Region is 18 years old, with some minor exceptions from companies like Donkey Republic (which allows younger adolescents to ride through an older registrant) and Norwegian-based e-scooter company Ryde (whose terms and conditions designate a 15-year-old age limit; DonkeyRepublic, n.d.; Ryde, n.d.). Local bicycle share systems in Finnish cities Helsinki and Tampere are unique in their 15-year-old age limit as well (HSL, n.d.; Nysse, n.d.).

Key takeaways for planning and policymaking



Winter and school travel represent some of the biggest untapped opportunities to increase adolescent cycling. Pictured: Girl cycling to school on a winter day in a Finnish suburb.
Suzi Media Production / iStock

The literature indicates several points for planners and policymakers to consider when trying to reach adolescents and increase active mobility among this population group. Alongside these points, we also provide takeaways based on the review of local level cycling strategies and findings from the cross-Nordic comparisons.

Increase physical activity through active commuting

There is great potential to increase active school commuting among adolescents, and in turn, to increase physical activity and improve public health. One of the largest areas of potential is among older adolescents, commuting distances under 5 km, and active commuting during the wintertime (Jussila et al., 2023; Kallio et al., 2016; Haug et al., 2021). Promoting active commuting from childhood and into young adulthood is important for establishing lifelong, sustainable habits that can continue into adulthood (Yang et al., 2025).

Consider the built environment

Policies and planning strategies to increase active modes of travel among adolescents should consider cycling and walking infrastructure as well as improving the density of street networks, while maintaining low traffic density from other modes. Planning neighbourhood environments with green spaces and high levels of walkability are also important. Special attention may be placed on connecting activities that adolescents visit regularly, such as school, after-school activities, and social gathering spaces. Improving other built environment factors may also encourage adolescents to choose active mobility, such as ensuring streetlights along paths and developing networks to and from school that follow public transport routes. Research suggests that solutions must be cross-cutting and comprehensive (Timperio et al., 2025; Sarjala et al., 2016; Laxdal et al., 2016; Schön et al., 2024; Malnes et al., 2025; Haug et al., 2021).

Change behaviour through culture

Interventions should not only focus on changes to the built environment but also consider motivational aspects for both children and parents. Encouraging adolescent behaviour change ultimately requires culture change, which involves numerous actors and transformations. "Stakeholders, including parents, teachers, physical activity organizers, health professionals, and policymakers, should enhance children's daily active commuting experience and strategically optimize environmental factors" (Yang et al., 2025, p. 2204-2205; Lindqvist et al., 2019; Haug et al., 2021; Westman et al., 2017).

Emphasize the social side of cycling

Commuting among adolescents is a social activity. Therefore, highlighting social aspects of cycling through campaigns or school initiatives, and supporting a cycling culture that is social as well as efficient, may be a fruitful way to encourage cycling among this group (Malnes et al., 2025; Lindqvist et al., 2019; Sarjala et al., 2016).

Consider the effects of school location

Distance has a major influence on cycling among adolescents, both with active transport to school and with travelling to leisure activities. Planners and policymakers should be aware that relocating schools can affect active school transport, which can, in turn, have other environmental and social impacts (Suomalainen et al., 2024).

Recognise diversity across ages

Regional and local policies tend to address adolescent cycling in broad terms, failing to recognise that distinct age groups require differentiated policy interventions.

Make it fun

Planners may consider learning from test initiatives such as "Heart Zones", "Bicycle Score", "Take Me to School", and others, implemented in Aarhus, Roskilde, Bergen, and Helsingborg. These illustrate various approaches to encourage young people to cycle while maintaining a strong focus on safety (Aarhus kommune, 2017; Bergen kommune, 2020; City Planning Helsingborg Committee, 2017; Roskilde kommune, 2017).

Include children's perspectives for developing safe cycling

Cycling strategies in Gothenburg and Copenhagen underline the importance of considering young cyclists in city planning. To accommodate the needs of adolescent cyclists, the strategies suggest developing separate cycling lanes that enable children to ride safely alongside their parents, reduce car speeds, and ensure that the traffic environment is intuitive and clearly marked (City of Copenhagen, 2011; Gothenburg Traffic Office, 2015).

Coordinate age and safety regulations across public and private actors

National bicycle and e-scooter regulations, requirements, and age limitations are oftentimes different and less strict compared to bicycle and e-scooter sharing services in the Nordic countries. Policymakers may consider whether such differences put additional pressure on transport-sharing services to ensure compliance with safety standards that exceed national requirements (see Table 3).

References

- Aarhus kommune. (2017). *Cykelhandlingsplan 2017*.
https://aarhus.dk/media/mvqbdw22/cykelhandlingsplan_2017-final.pdf
- Althingi. (2019). *Umferðarlög*. <https://www.althingi.is/lagas/nuna/2019077.html>
- Bergen kommune. (2020). *Sykkelstrategi for Bergen 2020 – 2030*.
<https://www.bergen.kommune.no/styrende-dokument/#/SD-24-50/filer>
- Bjørnara, H.B., Torstveit, M.K., Stea, T.H., & Bere, E. (2016). Is there such a thing as sustainable physical activity? *Scandinavian Journal of Medicine & Science in Sports*, 27, 366-372. <https://doi.org/10.1111/sms.12669>
- Björnstig, J., Bylund, P.-O., & Björnstif, U. (2017). Vehicle-related injuries in and around a medium-sized Swedish city—bicyclist injuries caused the heaviest burden on the medical sector. *Injury Epidemiology*, 4, 4. <https://doi.org/10.1186/s40621-016-0101-8>
- Bojesen, A.B., Rayce, S.B. (2020). Effectiveness of a school-based road safety educational program for lower secondary school students in Denmark: A cluster-randomized controlled trial. *Accident Analysis and Prevention*, 147, 105773.
<https://doi.org/10.1016/j.aap.2020.105773>
- Bolt. (n.d.). Frequently asked questions. <https://bolt.eu/en/ebikes/#faq>
- City of Copenhagen. (2011). *Good, Better, Best: The City of Copenhagen's Bicycle Strategy 2011-2025*. https://kk.sites.itera.dk/apps/kk_pub2/pdf/823_Bg65v7UH2t.pdf
- City of Reykjavík. (2021). *Reykjavík Cycling Plan 2021–2025*.
https://reykjavik.is/sites/default/files/2021-11/hjolreidaaetlun_reykjavikur_2021-2025_-_mai_2021.pdf
- City Planning Helsingborg Committee. (2017). *Cykelplan Helsingborgs stad 2017–2023*.
https://media.helsingborg.se/uploads/networks/1/2014/11/cykelplan_2017_antagen_webb_sbf.pdf
- Cyklistforbundet. (n.d.). *Færdselsloven for cyklister*. <https://www.cyklistforbundet.dk/alt-om-cykling/lov-og-regler/faerdselsloven-for-cyklister>
- DSB. (n.d.). *What you need to know about electric scooters for kids*.
<https://www.dsb.no/en/Safe-everyday-life/Products-Equipment-94-Leisure/What-you-need-to-know-about-electric-scooters-for-kids/#:~:text=It%20is%20not%20allowed%20for,15%20must%20wear%20a%20helmet>
- Donkey Republic. (n.d.). Terms and conditions. <https://www.donkey.bike/terms-and-conditions>
- Finnish Road Safety Council Liikenneturva. (n.d.). *Cycling in Finland*.
<https://www.liikenneturva.fi/wp-content/uploads/2023/11/Cycling-in-Finland-EN-2025.pdf>

- Finnish Road Safety Council Liikenneturva. (n.d.). *On foot & by bike*. https://www.liikenneturva.fi/wp-content/uploads/2022/09/OnFoot_and_ByBike2023.pdf
- Gothenburg Traffic Office. (2015). *CYKELPROGRAM FÖR EN NÄRA STORSTAD 2015–2025*. https://goteborg.se/wps/wcm/connect/538134e2-844e-4e46-acc4-fe74a673cefb/Cykelprogram_antagen_web_FINAL.pdf?MOD=AJPERES
- Haug, E., Smith, O.R.F., Buksch, J., Brindley, C., Pavelka, J., Hamrik, Z., Inchley, J., Roberts, C., Mathisen, F.K.S., & Sigmundová, D. (2021). 12-year trends in active school transport across four European countries—Findings from the Health Behaviour in School-Aged Children (HBSC) study. *International Journal of Environmental Research and Public Health*, 18, 2118. <https://doi.org/10.3390/ijerph18042118>
- Helsingborg stad. (2025). *Barntrafikskolan*. <https://helsingborg.se/trafik-och-stadsplanering/gator-och-trottoarer/barntrafikskolan/>
- HSL. (n.d.). Frequently asked questions about Helsinki and Espoo city bikes. <https://www.hsl.fi/en/citybikes/helsinki/faq>
- Island.is. (n.d.). *Cycling*. <https://island.is/en/cycling>
- Island.is. (n.d.). *Electric scooter wheels*. <https://island.is/en/electric-scooter-wheels>
- Jingili, N., Oyelere, S.S., Berghem, S.M., Brännström, R., Laine, T.H., & Balogun, O.S. (2023). Adolescents' perceptions of active school transport in northern Sweden. *Heliyon*, 9, e20779. <https://doi.org/10.1016/j.heliyon.2023.e20779>
- Jussila, J.J., Pulakka, A., Halonen, J.I., Salo, P., Allaouat, S., Mikkonen, S., & Lanki, T. (2023). Are active school transport and leisure-time physical activity associated with performance and wellbeing at secondary school? A population-based study. *European Journal of Public Health*, 33(5), 884-890. <https://doi.org/10.1093/eurpub/ckad128>
- Kallio, J., Turpeinen, S., Hakonen, H., & Tammelin, T. (2016). Active commuting to school in Finland, the potential for physical activity increase in different seasons. *International Journal of Circumpolar Health*, 75(1): 33319. <https://doi.org/10.3402/ijch.v75.33319>
- Kaplan, S., Nielsen, T.A.S., & Giacomo Prato, C. (2016). Walking, cycling, and the urban form: A Heckman selection model of active travel mode and distance by young adolescents. *Transportation Research Part D*, 44, 55-65. <http://dx.doi.org/10.1016/j.trd.2016.02.011>
- Kongsvold, A., Flaaten, M., Schjelderup Skarpsno, E., Logacjov, A., Bach, K., Lund Nilsen, T.I., Jarle Mork, P. (2025). Contribution of walking, running, and cycling to moderate-to-vigorous and total physical activity in adolescents and adults across and within seasons: Cross-sectional data from the Norwegian HUNT study. *BMJ Open Sport & Exercise Medicine*, 11, e002394. <https://doi.org/10.1136/bmjsem-2024-002394>
- Land. (2019). *Cykelreglerna du bör ha koll på i trafiken*. <https://www.land.se/livet-pa-landet/cykelregler-det-har-ger-boter-i-trafiken>

- Laxdal, A., Johansen, B.T., Bere, E., & Solstad, B.E. (2022). Towards more sustainable sports: Analyzing the travel behavior of adolescent soccer players in Southern Norway. *International Journal of Environmental Research and Public Health*, 19(15), 9373. <https://doi.org/10.3390/ijerph19159373>
- Lime. (n.d.). Safety first. <https://www.li.me/en-uy/why/safety>
- Lindqvist, A-K., Löf, M., Ek, A., & Rutberg, S. (2019). Active school transportation in winter conditions: Biking together is warmer. *International Journal of Environmental Research and Public Health*, 16(2), 234. <https://doi.org/10.3390/ijerph16020234>
- Malnes, L., Berntsen, S., Kolle, E., Ivarsson, A., Dyrstad, S.M., Resaland, G.K., Solberg, R., & Haugen, T. (2023). School-based physical activity in relation to active travel—a cluster randomized controlled trial among adolescents enrolled in the school in motion study in Norway. *International Journal of Behavioral Nutrition and Physical Activity*, 20, 136. <https://doi.org/10.1186/s12966-023-01534-x>
- Malnes, L., Haugen, T., Nordbø, E.C.A., Ivarsson, A., Kolle, E., Resaland, G.K., Solberg, R.B., Åvitsland, A., & Berntsen, S. (2025). Objectively measured environmental factors in relation to school travel mode among adolescents: A decision tree analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 22, 26. <https://doi.org/10.1186/s12966-025-01727-6>
- Ng, K., Koski, P., Palomaki, S., Mononen, K., Blomqvist, M., Vasankari, T., & Kokko, S. (2021). Finnish late adolescents' physical activity during COVID-19 spring 2020 lockdown. *BMC Public Health*, 21, 2197. <https://doi.org/10.1186/s12889-021-12263-w>
- Nysse. (n.d.). Terms of use for using city bikes. <https://www.nysse.fi/en/city-bikes/terms-of-use.html>
- Næss, I., Galteland, P., Oddvar Skaga, N., Eken, T., & Helseth, E. (2020). The number of patients hospitalized with bicycle injuries is increasing—A cry for better road safety. *Accident Analysis and Prevention*, 148, 105836. <https://doi.org/10.1016/j.aap.2020.105836>
- Oslo kommune. (2015). *Oslo sykkelstrategi 2015-2025*. <https://www.oslo.kommune.no/getfile.php/13482720-1687954950/Tjenester%20og%20tilbud/Gate%2C%20transport%20og%20parkering/Sykkel/Sykkelstrategier%20og%20dokumenter/Oslos%20sykkelstrategi%202015-2025.pdf>
- Region Stockholm. (2014). *Regional cykelplan för Stockholms län*. <https://www.regionstockholm.se/497bc4/siteassets/regional-utveckling/strategier-och-planer/regional-cykelplan-for-stockholms-lan.pdf>
- Roskilde kommune. (2017). *CYKLISTPLAN 2017*. <https://www.roskilde.dk/media/racixk3v/cyklistplan-2017.pdf>
- Ryde. (n.d.). Terms and conditions. <https://www.ryde-technology.com/terms-conditions-norway>
- Rådet for sikker trafik. (n.d.). *Cykelhjelme: Hvad siger loven?* <https://www.sikkertrafik.dk/rad-og-viden/cykel/cykelhjelme/hvad-siger-loven/>

- Sarjala, S., Broberg, A., & Hynynen, A. (2016). Children and youth transport in different urban morphological types. *The Journal of Transport and Land Use*, 9(2), 87-103. <https://doi.org/10.5198/jtlu.2015.803>
- Schön, P., Heinen, E., Rangul, V., Sund, E.R., & Manum, B. (2024). The impact of street network connectivity on active school travel: Norway's HUNT study. *Environment and Planning B: Urban Analytics and City Science*, 51(9), 2146-2163. <https://doi.org/10.1177/239980832412359>
- Seitakari, L., Pakarinen, O., Harjola, V-P., Castrén, M., & Vasara, H. (2025). Comparing the characteristics of electric scooter and bicycle injuries: A retrospective cohort study. *Scientific Reports*, 15, 27599. <https://doi.org/10.1038/s41598-025-12627-x>
- Statens vegvesen. (n.d.). *Technical requirements applying to e-scooters*. <https://www.vegvesen.no/en/traffic-information/traffic-safety/safety-and-electric-scooters/technical-requirements/>
- Statens vegvesen. (n.d.). *Traffic rules for cyclists*. <https://www.vegvesen.no/en/traffic-information/along-the-road/norwegian-traffic-rules/traffic-rules-for-cyclists/>
- Statens vegvesen. (n.d.). *Traffic rules for electric scooters*. <https://www.vegvesen.no/en/traffic-information/traffic-safety/safety-and-electric-scooters/traffic-rules/>
- Stockholms stad. (2022). *Cykelstaden: En del av framkomlighetsstrategin*. <https://cykla.stockholm/siteassets/cykla-i-stockholm/dokument/cykelplan-for-stockholms-stad.pdf>
- Suomalainen, E., Malinen, H., & Tainio, M. (2024). Modelling cycling to school in Finland. *Journal of Cycling and Micromobility Research*, 2, 100034. <https://doi.org/10.1016/j.jcmr.2024.100034>
- Suominen, T.H., Kukko, T., Yang, X., Pahkala, K., Rovio, S., Hirvensalo, M., Kähönen, M., Raitakari, O., Tammelin, T.H., & Salin, K. (2025-a). Correlates of active commuting to school across two generations: The Cardiovascular Risk in Young Finns study. *Scandinavian Journal of Public Health*, 53, 863-871. <https://doi.org/10.1177/14034948241304246>
- Suominen, T.H., Kukko, T., Yang, X., Pahkala, K., Rovio, S., Hirvensalo, M., Kähönen, M., Raitakari, O., Tammelin, T.H., & Salin, K. (2025-b). Continuity of active commuting to school across two generations: The Cardiovascular Risk in Young Finns study. *European Journal of Public Health*, 35(4), 745-751. <https://doi.org/10.1093/eurpub/ckaf084>
- te Velde, S.J., Haraldsen, E., Vik, F.N., De Bourdeaudhuij, I., Kovacs, E., Moreno, L.A., Dössegger, A., Manios, Y., Brug, J., & Bere, E. (2017). Associations of commuting to school and work with demographic variables and with weight status in eight European countries: The ENERGY-cross sectional study. *Preventive Medicine*, 99, 305-312. <https://doi.org/10.1016/j.ypmed.2017.03.005>

Timperio, A., Duncan, S., Akram, M., Molina-Garcia, J., Van Dyck, D., Barnett, A., Salonna, F., RM, A., Sallis, J.F., Vorlicek, M., Hinckson, E., Cain, K.L., Conway, T.L., Mana Wan Muda, W.A., Moran, M., Oyeyemi, A.L., Pizarro, A., Reis, R.S., Rezwan, S.M., Schipperijn, J., & Cerin, E. (2025). Associations between parental perceptions of neighbourhood environments and active travel to school: IPEN Adolescent study. *International Journal of Behavioral Nutrition and Physical Activity*, 22, 55. <https://doi.org/10.1186/s12966-025-01738-3>

Transportstyrelsen. (2025). *Elsparckcykel*.

<https://www.transportstyrelsen.se/elsparckcykel#:~:text=Om%20elsparckcykeln%20g%C3%A5r%20snabbare%20%C3%A4n,endast%20inom%20ett%20inh%C3%A4gnat%20omr%C3%A5de>

Transportstyrelsen. (2026). *Cykel*.

<https://www.transportstyrelsen.se/sv/vagtrafik/fordon/fordonsregler/regler-for-olika-fordonsslag/cykel/>

Unkuri, J., Salminen, P., Sihvola, N., & Kosola, S. (2023). On a collision course: Fatal motorcycle and bicycle accidents of adolescents in Finland from 2008 to 2019. *European Journal of Public Health*, 34(2), 267-271. <https://doi.org/10.1093/eurpub/ckad198>

Voi. (n.d.). How it works. <https://www.voi.com/how-to-voi>

Werneck, A.O., Jago, R., Kriemler, S., Andersen, L.B., Wedderkopp, N., Northstone, K., Salmon, J., & van Sluijs, E.M.F. (2021). Association of change in the school travel mode with changes in different physical activity intensities and sedentary time: A International Children's Accelerometry Database study. *Preventive Medicine*, 153, 106862.

<https://doi.org/10.1016/j.ypmed.2021.106862>

Westman, J., Friman, M., & Olsson, L.E. (2017). What drives them to drive?—Parents' reasons for choosing the car to take their children to school. *Frontiers in Psychology*, 8, 1970. <https://doi.org/10.3389/fpsyg.2017.01970>

Yang, X., Kukko, T., Salin, K., Kulmala, J., Rovio, S.P., Pahkala, K., Lehtimäki, T., Raitakari, O.T., & Tammelin, T.H. (2025). Tracking and trajectory analysis of active commuting from childhood to midlife. *Medicine & Science in Sports & Exercise*, 57(10), 2196-2206.

<https://doi.org/10.1249/MSS.00000000000003760>

Yle. (2025). *Finland to fine parents if their underage child drives an e-scooter*.

<https://yle.fi/a/74-20167646#:~:text=Changes%20to%20the%20laws%20around,force%20next%20Tuesday%2C%2017%20June.&text=Finland's%20Parliament%20approved%20a%20government,imposed%20on%20the%20rental%20company>

Your Europe. (2024). *Road rules and safety – Sweden*.

https://europa.eu/youreurope/citizens/travel/driving-abroad/road-rules-and-safety/sweden/index_en.htm#safety_helmet

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Nordregio

Holmamiralens Väg 10

Skeppsholmen

Stockholm, Sweden

www.nordregio.org