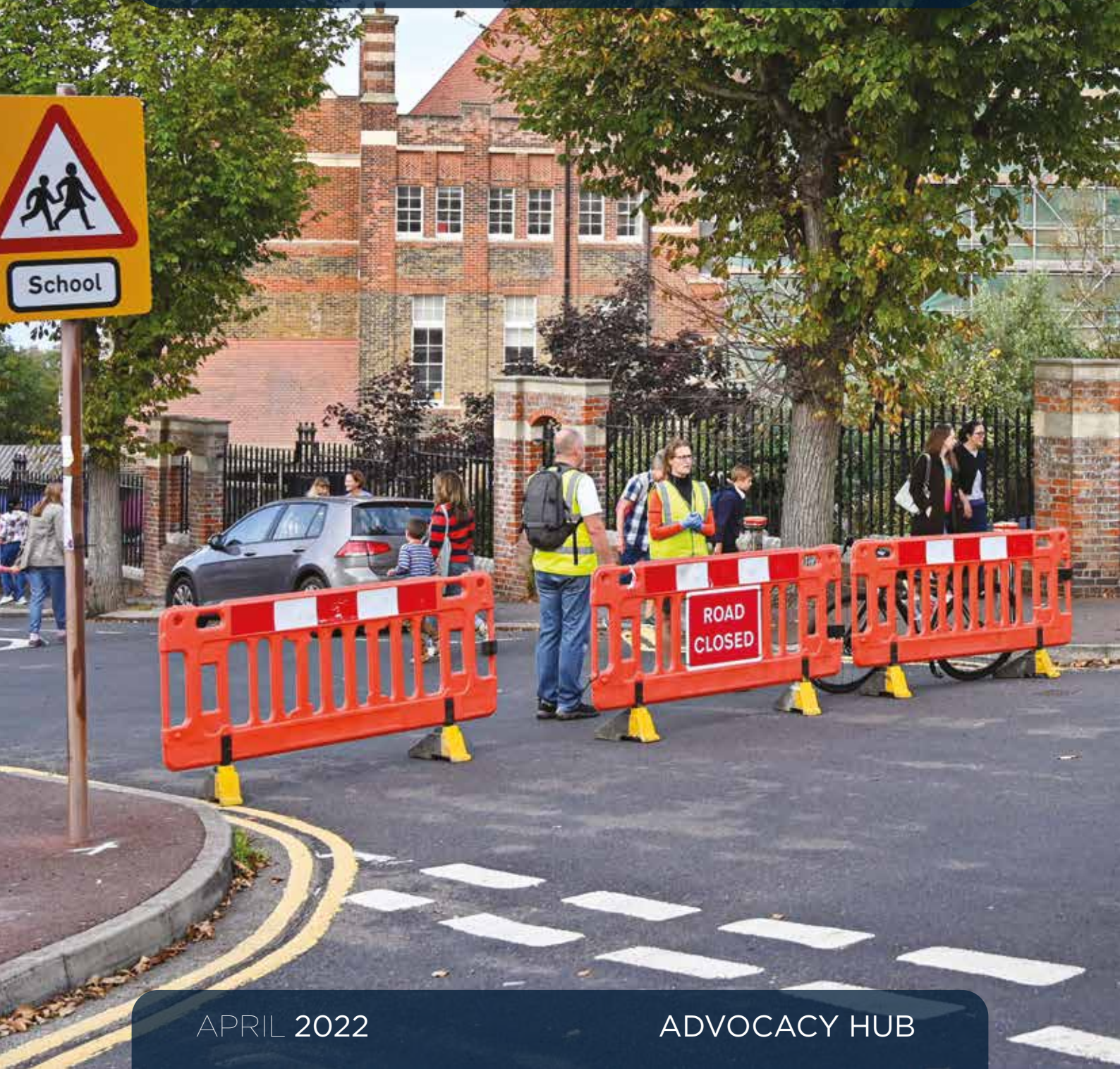


# SCHOOL STREETS: PUTTING CHILDREN AND THE PLANET FIRST

A POLITICAL ECONOMY ANALYSIS  
OF THE RISE OF SCHOOL STREETS IN  
EUROPE AND AROUND THE WORLD



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Cover photo and p13/14: Barriers close the road outside a school in Brighton, UK (Alamy). P5 Photo: Before/after School street where car parking and lane of traffic removed to create space to play Qendra Marrëdhënie, Tirana. P8: Alderman Robert van Asten, City of Hague. P10: from p13/14 of <https://www.childhealthinitiative.org/media/790954/these-are-our-streets-manifesto-2030.pdf> Additional space created and speeds reduced outside a school in Bogota. P18: "Safely Together to School" Primary School, City of The Hague. P29: Street Planter, City of Paris. P34: A family walk to school along a main road, London . P36: Entrance Barrier, City of Winnipeg. P40: Visualisation of greening outside school, City of Paris. P43 / 44: Schoolgirls walk to school in Africa (Shutterstock). P49 / 50: A boy prays outside a school zone in the Philippines (Alamy). P54: Cyclist passing school street barrier, City of Hague. P58: Low-cost creation of space to play, Qendra Marrëdhënie, Tirana.

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# ABOUT THE CHILD HEALTH INITIATIVE

**The Child Health Initiative operates as a collaborative partnership, with a focus on global and national advocacy, research, and programme implementation. It aims to provide a voice for the particular needs and rights of children within transportation and urban mobility policymaking; to highlight the serious and costly health impacts on the young of unsafe roads and air pollution; and to demonstrate, through applied research, programmatic support and technical assistance, the many effective solutions that are available.**

Hosted at, and coordinated by, the FIA Foundation, the Child Health Initiative focuses on these rights of every child:

- the right to use safe roads
- the right to breathe clean air
- the right to an education
- the right to explore in safety
- the right to protection from violence
- the right to be heard

### **ABOUT THIS PAPER**

This paper takes a political economy approach to understanding the rise of school streets. It tries to understand the factors that have created the power for positive change – exploring the ideas, institutions and what empowers the change. The work builds on a previous case study report on London ('Every Child's Right to Breathe') which included a focus on school streets. This was published by the Child Health Initiative in 2017 and focused on a range of measures to provide safe and healthy journeys to school for every child.

This paper aims to contribute to achieving a 'safe and healthy journey for every child'. This is a key part of the Habitat III New Urban Agenda, and will contribute to achieving a range of Sustainable Development Goals.

# EXECUTIVE SUMMARY



## What are school streets and why are they important?

**School streets are car-free areas outside schools.** Roads are closed to vehicles (or they have severely restricted access) - normally just for a short period at the start and end of the school day. Some are permanently car-free.

**School streets put children first.** They provide space for kids to be kids, to talk, scoot, play or pause on the way to school. A car-free space reduces noise, stress, pollution, and the risk of injury. It encourages physical activity, and the social connections and other benefits for people’s wellbeing that this can bring.

**School streets are simple and low-cost.** They can be trialed with basic materials - such as standard temporary barriers, although some use technology to reduce the numbers of regular volunteers required - reducing the organisational burden (which over time is important to consider for long-term sustainability). They can also be implemented quickly - although engagement with stakeholders and comprehensive plans are usually important for long-term success. Over time, there is the potential to progress to more lasting changes, including permanently making spaces car-free, and planting trees and providing benches and areas to meet and play.

**School streets make a difference.** Evaluations show a measurable positive impact, such as reducing air pollution around schools by almost a quarter in London, and are overwhelmingly popular with parents, teachers and pupils.

## The expansion of school streets

**School streets are not new, but there has been an explosive expansion in response to COVID-19.** From just a few school streets in Northern Italy in the 1990s, expansion was initially slow, spreading through parts of Belgium and other European cities in the last decade. By 2019, there were examples in around 8 countries, but the COVID-19 pandemic massively accelerated the growth. In two years, the number of countries with school streets doubled. In London alone, the number increased by five times from 80 in 2019 to over 500. The need to create additional space for social distancing and provide additional capacity for walking and cycling to replace public transport have led to the numbers increasing exponentially.

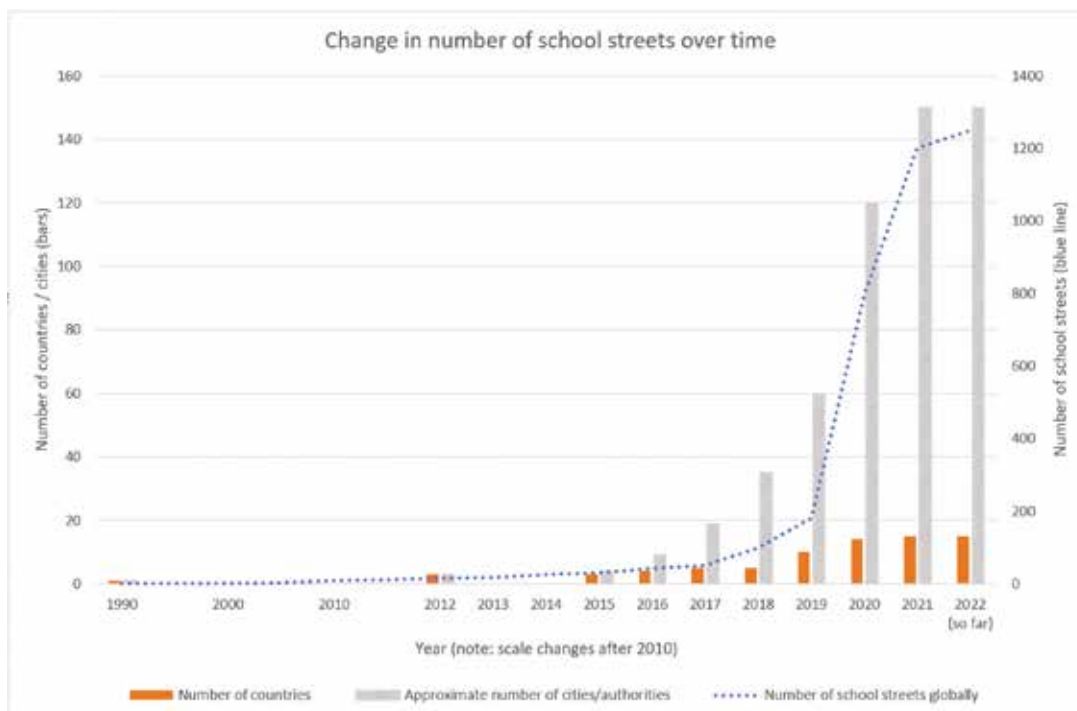


Figure 1

### The right idea for the right time

Figure 1 shows a rapid exponential increase that took off and accelerated rapidly in 2020, as authorities sought to respond to the COVID-19 pandemic. School streets were a quick, low-cost solution that provided space for social distancing, and additional capacity for helping people move efficiently and safely without needing to rely on mass transit.

Change is rarely linear, and often things can remain constant or only change slowly for a long time until a critical threshold is reached, and then things shift quickly. This is certainly the case with school streets. Where once authorities might have been reticent to consider new ideas, COVID-19 meant there was now a new urgency to consider alternatives. The pandemic also brought into focus our mortality and allowed people to experience a counter-factual without noisy vehicles polluting the air, and to dream of building back better and experiencing a different future.

### Expansion across Europe and North America

There are now over 1,250 school streets around the world implemented in over a dozen countries, and the number continues to rise. Most of these are in Europe, although there are also examples in Canada, and the U.S., and similar concepts in a number of other countries. Of course, not all school streets that are piloted will be made permanent, but evidence suggests that the great majority are.

The first school streets were in Bolzano, Italy in 1989, followed by Milan, Ghent (Belgium) and East Lothian (Scotland, UK) in 2012. The first school street in London was implemented in Camden in 2016, and others in England were implemented in 2018 in Solihull and Southampton. School streets spread to Austria in 2018 with one in Vienna, and to the Hague in the Netherlands in 2019. The first school streets in Paris were introduced in 2019, with significant expansion across France in 2020. Since 2020, there have also been school streets in the Czech Republic, as well as further expansion across Italy. School streets have spread throughout England and Wales, as well as across most London Boroughs. The first school streets spread to North America in 2019 with a number of trials in Canada, and there have also been schemes in the US, most notably in New York, but also Seattle and Portland and a pilot in L.A. There was one trial in Australia in 2021.

**School streets are universal but can be adapted to local circumstances.** The concept is used in slightly different ways in several countries, and the term is used to describe a range of things. In this report, it is defined as a car-free road closure (across its full width), to distinguish it from a traditional school zone, where vehicles are still allowed but are subject to additional safety restrictions. As NACTO puts it, they are “temporary or permanent street closures in front of schools”.

In addition, there are similar concepts in a number of other countries. In Denmark a whole street was converted to become an extended playground, and another school created a permanent shared space which prioritizes children’s play. In Spain, Albania, and New Zealand, road space outside schools has been removed to create additional space for children – although a flow of vehicles is still retained.

**School streets are similar to school zones – both can be steps to better, safer cleaner streets.** School zones reduce road traffic risks around schools through lower speed limits or traffic calming features. So far, most school streets have been tried in higher income areas that already have existing safety features. In areas that don’t, these would need to be added in surrounding roads. In roads that do have vehicles, a range of policy measures are needed – both for improving safety, but also in reducing emissions and supporting walking, cycling and mass transit.



## What has influenced the growth in school streets?

Using a political economy approach to distinguishing ideas, institutions and incentives that shape change this paper sets out what has inspired the rise of school streets, the organisations and individuals who have supported and led projects to make streets outside schools car-free, and the factors that have enabled them to do this successfully.

### What has inspired change? ('Ideas')

- **Multidimensional evidence on the importance of clean, safe and healthy streets**  
There has been a new recognition of the wide environmental impacts of vehicles in cities, with new studies providing evidence of a range of health effects. These include a new understanding of the impacts of air pollution on children in Europe (particularly after 'dieselgate'), as well as the impact of a lack of active travel on levels of physical activity, the importance of road safety in reducing the shocking levels of road traffic injuries around the world, as well as more traditional school transport planning agendas aimed at reducing congestion.
- **The success of people-centred approaches using low-cost materials around the world**  
From Colombia to India and beyond, cities are discovering that experimenting with temporary street changes allows new ideas to be tested and experienced. New York's transformation of its streets and public spaces by undertaking cheap and quick experiments, such as shutting off Times Square to vehicles and putting out deckchairs, powerfully demonstrated that change is possible. This is part of a wider movement known as 'tactical urbanism' that has been replicated around the world, including by NACTO's Global Street Designing Initiative, which have increased the legitimacy of experimental approaches and pilots among transport planners. Similarly, the 'open streets' movements, such as Bogota's 'ciclovía' where streets are regularly closed to traffic every Sunday morning to enable people to walk and cycle, exercise and play have proved popular and been replicated in many other cities.
- **COVID-19: Creating space for social distancing and a desire to 'Build back better'**  
The COVID-19 pandemic led to a rapid explosion of the number of school streets in Europe, particularly where cities had already experimented with the idea and had developed policies and replicable processes. The need to create safe spaces for social distancing around school entrances and to allow increased volumes of pedestrians and cyclists to travel safely and compensate for reduced capacity on public transport while preventing the 'carmageddon' that would result from the alternative switch to private vehicles.
- **A simple yet effective concept**  
The idea of school streets is powerfully simple, yet simultaneously revolutionary. While there are some complexities in adapting how it is implemented to local circumstances, the availability of toolkits, which codified knowledge and experiences into step-by-step guides meant that it is still an easy idea to try.
- **Putting kids first – seeing streets through the eyes of children and young people**  
For a number of years, there has been an increasing focus on how to consider the needs of children in urban environments. Whether this is the 'woonerf' movement in the Netherlands, play streets in the UK, or the wider network led by UNICEF or child-friendly cities, and Bernard Van Leer Foundation's Urban 95 project, seeing children as the lens through which to see cities is powerful. As Enrique Peñalosa, former Mayor of Bogota has said "Children are a kind of indicator species. If we can build a successful city for children, we will have a successful city for all people."
- **The climate emergency and student-led campaigns**  
Whether it is Extinction Rebellion or the School Strikes movement, or both, the voice of children in advocating for change has never been louder, and the need for action to reduce emissions has never been more urgent. School streets give a way for schools to respond and for children to see that a better alternative is possible.

### Who has led change? ('Institutions')

- **Authorities taking part in international projects sharing ideas and support**  
While the rapid increase in school streets has happened in the past five years, the groundwork for this was done around a decade ago. The first step in school streets gaining widespread attention was an EU project that shared the example of Bolzano in Italy across multiple countries, which helped foster leaders such as Hackney, Milan, Edinburgh and parts of Belgium.
- **Established school travel planning (or 'safe routes to school') professionals in many cities and authorities**  
Many countries already have existing processes for coordinating different stakeholders and encouraging active travel on the route to school. Sometimes the motivation has been reducing congestion or pollution, but the staff responsible for this area are often leading advocates for the idea – such as the trial in Hague.

- **Strong leadership from Mayors and political leaders**

Changing the status quo can sometimes be seen as risky, and it requires effective leadership to implement a new idea. However, the majority of successful examples show that while there can be opposition, these schemes are overwhelmingly popular overall. Whether it is in London, Paris, or Milan the leaders have developed bold plans and included school streets as part of a wider transformation of mobility in the city. Even leaders below this level, such as the Mayor and Transport Lead of the London Borough of Hackney or Alderman for transport in The Hague have shown how community-scale planning is important to prioritise air quality and livability. Tirana is perhaps the most powerful example of how a Mayor has taken a child-centred approach as the fundamental lens for all changes, building on the experiences of Bogota.

- **Legislation, policies and processes**

While some countries can by-pass bureaucracy through frameworks that allow experimental approaches, in most cases, one of the key challenges is navigating the existing legal frameworks, highway codes and processes to get permission for temporarily closing a road to traffic. Most countries have different road laws that govern rules around signage, or use of cameras for enforcement, and many cities or towns have additional processes that must be followed to get permission – which were usually not designed with school streets in mind. Streamlining these processes and developing standard forms and procedures makes it far easier to replicate and scale school streets.

- **A range of other local stakeholders have been crucial to success**

While political leadership is important, often it is the practical support of parents, police, volunteers, and the students themselves that allows the school streets to take place. In countries where volunteers are used to close roads, a large numbers of regular helpers are needed. Where cameras are not used, enforcement from police is also occasionally required to ensure that the rules are being followed and have credibility.

- **Campaign groups, individuals and respected international organisations backing the idea and sharing it**

Across the world a large number of individuals, organisations and networks have supported school streets and have campaigned for schools and authorities to try it. In many cases, this has been individuals who have demanded change in their own local area, but have subsequently become key voices in a wider network – such as ‘Mums for Lungs’ in the UK and ‘Tutti Giù per Strada’ in Italy.

### **How was change possible? (‘Incentives’)**

- **Quick to implement and scalable – perfect fit for COVID-19 response**

The need to quickly create space for social distancing outside large numbers of schools meant a simple approach was needed, but also offered the potential for creating a sustained long-term improvement.

- **Affordable**

The relatively low cost of implementing basic schemes meant that it was possible to implement large numbers. In addition, funding for school streets is available from a range of sources / agendas – particularly school travel, air quality, and active travel as well as the emergency COVID response.

- **Technology has enabled powerful ideas to spread rapidly**

Social media and increasing use of webinar technology have allowed the idea to become well known. The simple and subversive nature of school streets, inverting the priority usually given to vehicles is also surprising and compelling, encouraging others to want to pilot the idea.

- **Recognition that livability matters**

With organisations and individuals increasingly globally mobile, the importance of cities addressing social and environmental issues and marketing their distinctive approaches has risen. New scorecards and rankings formalise this international ‘competition’ to have the highest quality of life and be seen as most ‘liveable’ – this is important for both economic prospects, and the reputation of leaders.

- **Evidence of success and practical support reducing risks of failure**

The growing network of organisations who have tried school streets means that there is a lot of experience for others to draw on. This knowledge, gathered through high quality evaluations and shared through toolkits can give confidence that school streets are likely to be successful, and unexpected challenges managed.

- **Ultimately about happy and healthy children**

At its core, school streets is about making life better for children. This is a positive message and universal connection and provides powerful intrinsic motivation for politicians, officials, parents and teachers alike.



## Recommendations

### 1. Put children first - make school streets for kids

School streets prioritise children over cars. It sounds simple, but it is strange that the dominance of private vehicles has not been more questioned, when it is putting children's health at risk. School streets are popular, and people enjoy their benefits. They help build connections, support networks and help people enjoy life. School streets are a simple, low-cost concept which any authority can try.

With the number of people living in cities rising rapidly globally, along with the increasing number of vehicles, more and more countries will need to take action to ensure safe and healthy routes to school for all children. Not every street can be made completely car-free, but all streets can take action to introduce safe speeds, such as 30km/h (20mph) limits, and take measures to support walking and cycling such as wide pavements, dedicated cycle lanes infrastructure, and appropriate places to cross.

### 2. Invest in active travel - healthy people, healthy planet

Children are the future, but so is our planet. Protecting children's health and reducing exposure to harmful emissions is vital to prevent respiratory illnesses that could lead to premature death or significantly reduce people's quality of life across many years. Preventing road injuries prevents serious trauma, healthcare costs and permanent disability. Streets that put people first save lives.

The need to cut emissions and transform the way we move around is equally urgent. Transforming the way we move around the city by supporting walking, cycling and mass transit has multiple benefits, including making us healthier, but it is also good for the planet. Children's voices are often the loudest and most persistent when it comes to speaking out on climate change, and school streets show that authorities are listening and care for our collective future. Investing in safe infrastructure for active travel across the whole community means everyone benefits.

### 3. Pilot - Try new things, learn from others, and make new connections

School streets and other 'tactical urbanism' approaches are relatively low cost but have a big impact. With the rise of social media and webinars, we now have access to a lot of examples and expertise from around the world and it is possible to move fast to replicate and scale ideas that work.

To achieve the United Nations' Sustainable Development Goals (SDGs) we need to work together and learn from a range of experts in order to make streets safer, cleaner and healthier. The Child Health Initiative brings together expert partners from around the world to address these issues. Achieving the New Urban Agenda's priority of a 'safe and healthy journey to school for every child' (para 113.), requires making streets safe for kids by lowering speed limits, making active travel attractive and ensuring coherence between different policy areas.

### 4. Be ambitious - bold leaders change lives for the better

Around the world Mayors and local leaders are being bold and experimenting with transforming streets. Ultimately although temporary schemes are good for showing what is possible, there needs to be permanent institutional solutions, whether through technology, funding or a wider cultural change, influenced by modifications in the urban realm to prioritise walking and cycling, tackle air pollution and road traffic danger, and ensure streets are places for people. By permanently closing streets to vehicles, Paris is also able to plant more trees, which will have a range of other climate and environmental benefits.

### 5. Use the power of networks - take a city-wide approach

In order to support a wider switch to active travel and reduce vehicle use, it is important that areas away from schools are safe as well. Complete walking and cycling routes have a far higher benefit than the sum of the individual sections on their own.

The COVID-19 response led cities to act fast to boost the mobility system and create additional space for social distancing. Cities such as London and Paris have introduced school streets as part of a wider package of measures across the whole city, such as standard 30km/h (20mph) speed limits, new cycling routes, and greater priority for pedestrians. Others such as Bogota have made that transformation over many years.

### 6. Safe and healthy streets are needed everywhere - especially in low- and middle- income countries

Currently, most school streets have been implemented in high-income country settings. However, the low-costs and simple concept potentially makes them transferable to low- and middle-income country settings. So far there

have been few trials in these settings – Tirana, Albania is the only example of a middle-income country, and no trials in low-income countries have been found. This appears to be at least partly because this is a relatively new concept.

While currently there appear to be few examples of school streets from Africa, Asia or Latin America, there are already inspiring examples of organisations undertaking action to reduce road safety risks around schools in low-income countries by introducing school zones – such as Amend’s School Area Road Safety Assessments and Improvements (SARSAI) programme, which won the inaugural Ross Prize for Cities. Organisations such as Clean Air Asia and UN Environment are also doing important work raising awareness of air pollution around schools. The ‘open streets’ concepts of temporary car-free roads for play and exercise are, however, common in Latin America and are spreading to other areas, including in several African countries.

**7. Reveal the invisible harm – Measure air pollution around schools in low- and middle-income countries**

Issues of air pollution and road safety around schools are at least as important in low- and middle-income countries as they are in many high income cities – although a lack of detailed data means that decision makers, parents and the schools themselves often lack information about levels at individual schools. Improving data on emissions is an important step for making the case for local action – campaigns for action in London, Brussels and Paris were all motivated by studies showing air pollution levels at schools and the impact on children’s health. There have been pilot projects showing how it is possible to enable school children to take part in citizen-science projects around schools, as well projects that are starting to measure air pollution in Africa, including the TRUE emissions project.



# INTRODUCTION



**This paper explores the concept of school streets – measures to create a car-free environment in front of schools<sup>1</sup>, allowing children to walk and cycle safely and reducing harmful vehicle emissions around schools. It aims to map the global spread of these schemes – which started in Northern Italy in the late 1980s and have spread rapidly in the past five years to many parts of Europe (particularly in Belgium, the UK, France and Italy), and are now being trialed in parts of North America. It also looks to explain the reasons for this expansion, using a political economy lens to explore the factors that have influenced these changes. In doing so, it aims to draw out lessons for those working for safe and healthy journeys to school.**

## **The need for school streets**

School streets have risen in prominence as a low-cost measure to support socially distanced travel to schools in response to COVID-19.<sup>2</sup> However, even before the pandemic there has been a global health crisis caused by unsafe and polluted streets. Globally, 1.35 million people die on the roads each year around the world, with road traffic injury being the leading cause of death for children and young adults aged 5–29 years.<sup>3</sup> The majority of these deaths occur in low- and middle-income countries,<sup>4</sup> and even within countries those facing higher levels of deprivation are more at risk of injury<sup>5</sup>.

Currently 91% of the world's population live in places where air pollution levels exceed WHO guideline limits,<sup>6</sup> with children particularly vulnerable as their lungs and brain are still developing, and their bodies are less able to metabolize, detoxify, and excrete the toxicants contained in air pollution<sup>7</sup>. Children are exposed to air pollution from the womb and breathe in relatively greater amounts than adults, as they are physically nearer to car exhausts and also breathe at a faster rate<sup>8</sup>. Physical activity ensures healthy growth and development in young people, yet globally 81% of adolescents aged 11–17 years are insufficiently physically active<sup>9</sup>. This is also a social justice issue – consistently the poorest communities are worst affected by unsafe streets and toxic air – this applies both in high income countries, but also more broadly in low- and middle- income countries, where 93% of road traffic injuries occur.<sup>10</sup>

Making the streets outside schools safe is a key priority, as it is such a regular journey for children. Around the world, a large proportion of injuries to children happen near schools. In Canada, the average distance between a child road injury and a school is less than 500 metres<sup>11</sup>. In Chile, 95% of casualties occurred within 500 metres of a school, with 70% within 250 metres.<sup>12</sup> In the UK, a study found that one-third of child road traffic injuries occurred on the way to or from school.<sup>13</sup>

Safe streets that enable active travel also support a range of benefits for children and young peoples' mental health, social connectedness and development of core life skills and independence<sup>14</sup>. Addressing these issues by ensuring safe and healthy journeys to and from school for every child by 2030 is the primary aim of the Child Health Initiative<sup>15</sup>, a global partnership hosted by the FIA Foundation which combines research, advocacy and evidence-based interventions.

## **The case for school streets**

### **A powerful idea**

The idea of school streets is both simple and challenging. It is simple because at its heart it is a very low-cost idea that can be implemented (or at least trialed) very quickly. It is challenging in two ways. Firstly, it is potentially very revolutionary, inverting the usual dominance of private vehicles on roads. Secondly as each context is different there are often challenges and complexities to overcome when initiating school streets. As the examples in this paper show, however, the benefits of streets that put people first are significant, and there is an increasing range of experiences in implementing these schemes in a range of contexts, which makes replicating their success easier.

### **Low-cost and simple to try**

School streets are a relatively low-cost intervention for promoting road safety, active travel and addressing local air pollution. During 2020 and 2021, in response to the COVID-19 pandemic, school streets were rapidly expanded to create additional space for social distancing on the journeys to and from school, and in some cases also providing locations for outdoor lessons or activities. Many of these were implemented as trials, with information collected about their impact to inform decisions about whether to keep, adapt or remove them.

## Focus of this paper

### A political economy approach to school streets

Political economy analysis aims to set out the key ideas, institutions and interests that influence change (or prevent it). It tries to understand how decisions are made, who has power, what shapes choices and how things are done.<sup>16</sup> In relation to 'school streets', this means understanding the roles of local authorities, politicians, parents, teachers, pupils and other stakeholders (such as police, public transport operators, residents), and the wider trends, legal frameworks, and contexts that shape decisions.

### A global perspective drawing on local experiences

Although the paper has a global focus, most of the examples come from Europe and there is more detail included on London. This is in part because London currently has the largest number of school streets, and there are a number of existing summaries and resources that document these. Although every effort has been made to access materials in other languages about non-English speaking countries (and numerous examples are included), the analysis of underlying trends and power dynamics is more developed for London. In part this is because the paper builds on a case study report undertaken in 2016 ('Every Child's Right to Breathe') that explored how London was implementing measures for safe and healthy journeys to school, which included details of some of the first 'school streets' pilots, alongside other measures to improve air quality, road safety and enable active travel.<sup>17</sup>

While currently there are no examples of school streets (if distinguished from sophisticated school zones) from Latin America, Asia or Africa, the paper also considers how applicable school streets are to other contexts, including developing and emerging countries. Clearly there are many differences in legislation, levels of motorisation and quality of infrastructure, and so there are many factors to consider. For organisations working in these contexts, including Child Health Initiative partners, this resource aims to provide some ideas and information that can be adapted to local conditions.





# WHAT ARE SCHOOL STREETS?

## School Streets: A broad concept

The concept of 'school streets' is relatively new, and while there is an increasing formalization of the concept, it is used in slightly different ways depending on the context. Taking a global perspective is also complicated by language.

A range of language is used to refer to the same common idea – particularly across different countries. In Belgium and the Netherlands they are called 'schoolstraat', while in Italy 'strade car free' is used in Milan ('strade scolastiche' in other Italian campaigns<sup>18</sup>), in Austria they are 'schulstraße'<sup>19</sup> and in Paris the equivalent programme is 'rues aux ecoles',<sup>20</sup> although elsewhere in France they are known simply as 'rues scolaire'<sup>21</sup>. In the UK, they are also sometimes described as 'healthy school streets' (particularly in London), or 'car-free school streets'<sup>22</sup>, and sometimes other language is used, such as 'pedestrianised school zone' (Croydon)<sup>23</sup>. The same 'school street' terminology is now also being used in a number of North American pilots and guides,<sup>24</sup> although the concept of 'open streets' is also widely used to refer car-free streets<sup>25</sup>, and as part of these New York includes a focus on closing streets to vehicles in front of schools<sup>26</sup>.

Although on its own, the 'school streets' title is not particularly descriptive or normative (indeed if you weren't familiar with it, it could appear universal), it is likely that this simplicity and ability to connect to a wide range of agendas is one of the reasons why it has become so widely used to describe regular timed restrictions outside schools. However, it also goes beyond this – and has almost come to be used as a vision of what streets outside schools should be like.

## Common features of school streets

While there are some differences between context and countries, the common features of most 'school streets' are:

- Restrictions limiting access to motorised vehicles near schools at drop off and pick up
- Restrictions are in place for approximately 15 to 90 minutes, normally at either end of the school day (but in some cases at lunchtime as well)
- Only pedestrians and cyclists can enter the School Street zone, plus exempted vehicles
- The road closure is enforced using signage and either a physical barrier, cameras or street design clearly showing that the street is not open to motorised vehicles
- Each scheme reflects the needs of the school and local community
- Some School Streets are permanent road closures or restrict access to only part of the road

## Benefits of school streets

There are many reasons for wanting to introduce school streets for safe and healthy journeys to school, including cleaner air, lower risk of road traffic injury and promoting physical activity. These include to:

- Reduce congestion and vehicles travelling through the School Street
- Reduce pollution around the school entrance
- Encourage more walking, cycling and active journeys from pupils and parents/carers
- Result in less inconsiderate parking and dangerous manoeuvres
- Create a calmer, safer and cleaner environment
- Encourage independent mobility
- Create space for community connection and sociability<sup>27</sup>

## Variations in concept

In practice, 'school street' restrictions outside schools look slightly different in different countries and contexts, in part because of different road layouts, legal frameworks, highway codes, powers of local authorities, as well as social and cultural norms. While most countries currently implement school streets as a timed closure that prevents vehicles entering the zone (except for some exemptions, typically access for residents), in Paris many of the roads in the 'rues aux ecoles' scheme have been permanently pedestrianized,<sup>28</sup> as well as a number in London. Most schemes start as a trial, which allows an assessment to be made of the impact of the scheme, and any adjustments made, before a decision is made about its long-term future.

In assessing suitability for a school street, many authorities use some or all of the following criteria<sup>29</sup>:

- Local support (both community and political)
- Existing issues of road safety and/or air pollution
- Low to medium volume of traffic (traffic counts may be done to assess this)
- Not on bus routes (or ways for these to be adapted)
- Does not disproportionately restrict access for local residents, or cause issues on neighbouring streets<sup>30</sup>
- The school has a school travel plan and is working to promote walking and cycling.<sup>31</sup>
- Alternative parking arrangements can be created at a reasonable distance<sup>32</sup>
- Where volunteers are required for barriers, these must be available<sup>33</sup>.

## Differences in approach

By closing the roads at the start and end of the school day, it provides a clear and powerful message to motorists about the rationale for the closure and provides a consistency and routine that people can become familiar with. Not all schemes have followed this pattern. In the UK, Nottingham implemented the restrictions all day (not just at the start and end of school) but found enforcement a challenge<sup>34</sup>. In Rome, the pilot project is just one day each week,<sup>35</sup> which is also the case in several Canadian pilots, including in Montreal<sup>36</sup>. The question here is whether this frequency is sufficient for the neighbourhood to adjust and people to change their everyday habits.

One reason for differences between countries may be due to the levels of compliance with traffic laws and expectations of enforcement. In some developing countries, there may be a lower expectation that people will obey the regulations<sup>37</sup>. Another difference may be due to the nature of the road network. In cities with a street grid it is potentially easier to close a block as there are multiple parallel alternative routes, whereas in other cities topography and a lack of alternative routes may make it more challenging to completely close these roads, which is one reason that Tirana went for partial closures, removing one lane of traffic (making the road one-way) or a lane of parking.

## School streets as an umbrella concept

In some cases, although they may be called 'school streets', they are more similar to what may be traditionally thought of as 'school zones', which are engineering solutions to reduce road traffic risk around schools, such as reduced speed limits, wider pavements and safe crossings. In practice there are many similarities, and school streets may be most effective where there are wider measures such as 30km/h zones are safe walking and cycling routes – but it is restrictions on traffic across the complete width of the road that differentiates school streets from school zones.

As this is a grey area, there are examples included here that reallocate significant space from vehicles to people outside schools. Barcelona has targeted roads outside schools, but has implemented permanent changes, such as removing parking spaces, through its 'protegim les escoles' programme ('We protect schools')<sup>38</sup>, while in Auckland, New Zealand, the restrictions in the 'safe school streets' pilot prevented parents parking, providing a 'drop off and pick up only area' instead.<sup>39</sup> In Albania, the changes remove one lane of traffic, making the road one-way, while creating more space to play and meet.<sup>40</sup> In Denmark, there is a shared space outside Vestre Skill in Odense, which has repurposed car parking and converted a dead-end road into additional space for children to play<sup>41</sup>.

## WHAT ARE SCHOOL STREETS?

Such variations in the concept is one of the challenges (and strengths) of having such a simple and ubiquitous 'umbrella term'. While some (such as the London Borough of Hackney's toolkit<sup>42</sup>) seek to formalise what it is or isn't, ultimately there is broad unity in its aims, which are generally presented as promoting children's health, through promoting active transport, reducing road traffic danger, and pollution, as well as reducing unnecessary vehicle trips and subsequent congestion. There are also wider community benefits from encouraging independent mobility and building social connections. While the examples from Barcelona, Tirana and Auckland in particular may not technically fit a narrow definition of 'school streets', they are included here as reference – and because they are sometimes referred to by others<sup>43</sup>. They also illustrate how the idea of car-free spaces and timed restrictions connect across the road safety, child-friendly cities, active travel and air quality agendas.



# SCHOOL STREETS: HISTORY AND EXPANSION



## The remarkable rise of school streets

From just a handful of school streets in northern Italy at the end of the 20<sup>th</sup> Century, there has been an exponential growth in the numbers of school streets, particularly in the past five years. The idea is simple, relatively low cost and can be rapidly implemented. There are now well over 1000 school streets around the world, with over half of these in the UK (the majority of these in London), but large numbers in Belgium, France and Italy.

Table 1 (which is included in a more extended version in the annex) aims to document the spread of school streets around the world. While it has been easier to find English-language materials discussing school streets, every effort has been made to identify school streets from all countries, by searching in multiple languages and consulting with experts.

### School Streets around the world

Country	Year started	Number of school streets
Italy	1989- (Bolzano), 2012- (Milan)	80+
Belgium	2012- (Ghent), Flemish areas	171+
Scotland (U.K.)	2012- (East Lothian), 2015- (Edinburgh)	35 (Glasgow), 15+ (Others)
England (U.K.)	2016- (Camden), 2018- (Solihull)	500 (London), 100+ (Others)
Denmark	2016 (Vanlose) <i>Converted street to playground.</i> <i>Also Odense shared street</i>	2
Austria	2018- (Vienna)	8
Netherlands	2019- (The Hague)	15+
France	2019- (Paris), 2020- (Other cities)	150 (Paris), 65+ (Others)
Ireland	2019- (Fingal, near Dublin) 2020- (Galway)	3
Canada	2019- (Pilots), Vancouver (2021-)	2+ (10+ pilots in 9 cities)
Czech Republic	2020- (Prague / Říčany)	1+
Wales (U.K.)	2020- (Cardiff)	15+
U.S.	2020- (New York) Open streets 2021- (Seattle, Portland, Los Angeles) <i>*Some equivalent closures before this</i>	100 10+ (+ trials) (New Haven NJ, Chelsea NY)
Australia	2021- (Moreland, Victoria)	1 (trial)
	Total	1100+
<i>Other similar 'school street' concepts that are not completely car-free</i>		
Spain	2020- (Barcelona) <i>Protegim les escoles</i>	150+
Albania	2020- Tirana <i>'School streets'</i>	11
New Zealand	2020- (Auckland) <i>'Safe School streets'</i>	<i>13 Similar concept and language</i>
	Total with these included	1250+

Table 1

The graph aims to map the growth of school streets over time. Exact year-by-year data of the expansion isn't available for all countries, although it is available at key milestones. The numbers of school streets and cities therefore aim to give a best indication of these trends - while the dates of the increase in the number of countries having school streets is more certain.

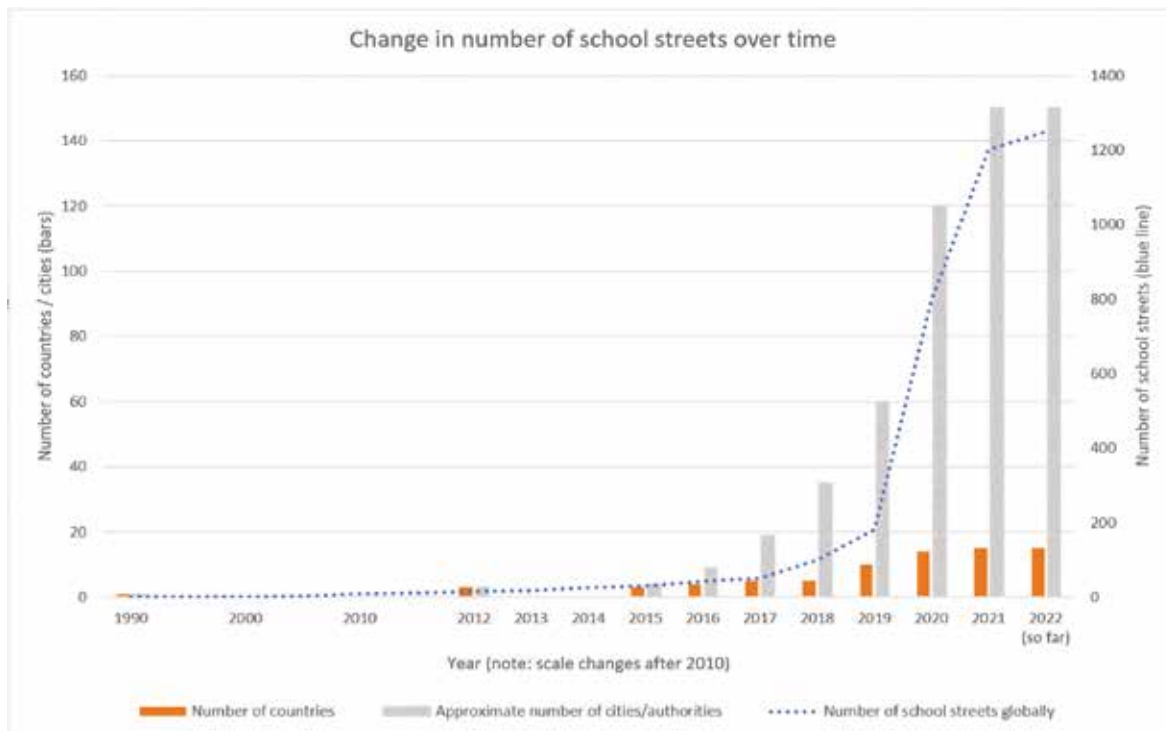


Figure 1

## History

### Origins in Bolzano, Italy

The prominence of common ‘school streets’ terminology across much of Europe and some of North America to describe the concept of closing off the road outside school to road traffic is perhaps linked to a series of EU-funded projects that shared experiences of sustainable school travel in the mid-2010s that popularised the concept in a number of European countries. A short film in English uploaded to the Eltis Mobility Platform in 2014, entitled ‘Bolzano: School Streets’ describes the experience of the small Italian city of Bolzano in South Tyrol that had been closing off the streets outside schools at the start and end of the day since 1989<sup>44</sup>.

### Expansion across Europe

The ‘STARS Europe project’, which ran from 2013-2017 helped popularise the concept. Milan, which was part of this project had established its first school streets (known as ‘strada car free’) at three primary schools in 2012 and shared its experiences (and Bolzano’s) for others to replicate. Other local authorities which were part of the project included the city of Edinburgh, which started its first ‘school streets’ in 2015, and the London Borough of Hackney, which followed suit in 2017. Later, the EU Metamorphosis project also provided support to Southampton and Vienna to pilot school streets<sup>45</sup>. The ‘school street’ terminology may also be linked to the Flemish ‘schoolstraat’ which started in the Belgian city of Ghent in 2012.

Subsequent expansion in London, Milan and Brussels was in part due to rising awareness of the impact of high levels of air pollution from vehicles on children’s health, and publicity of the wide benefits of existing schemes.

### COVID-19 response

However, the spread of the concept accelerated even faster in response to the need for additional space for social distancing and to safely re-open schools in countries affected by lockdowns, including featuring in UNICEF’s Guidance for Safe and Healthy Journeys to School During the COVID-19 Pandemic and Beyond<sup>46</sup>. As well as immediate public health concerns, there was also a motivation to ‘build back better’, with experts such as WRI making the case for investing in recovery efforts that would maximise environmental, economic, social and health benefits.<sup>47</sup> At the same time, there was also a genuine fear that there could be far worse outcomes if a lack of public transport capacity led to people turning to private vehicles – the idea of a ‘carmageddon’.<sup>48</sup> The potential links between air pollution, respiratory illness and COVID-19 outcomes made this is even more of a priority.<sup>49</sup>

## SCHOOL STREETS: HISTORY AND EXPANSION

While the concept is now well-established nationwide in Belgium, France and the UK, a number of other European countries are trialing the concept and developing standard procedures for their adoption. Ireland currently has piloted three school streets and the concept is included in the National Transport Authority design guide<sup>50</sup>. In the Netherlands, the idea has spread in the Hague, inspired by their success in Flemish schools. There are also a number in Austria and the Czech Republic.

### Expansion in North America

Expansion to North America is more recent and is linked to connections (including through social media and online webinars) to Europe, as well as its inclusion in NACTO's *Designing Streets for Kids* guidance<sup>51</sup> and subsequent guidance around possible COVID-19 interventions.<sup>52</sup> There are now school streets pilots in at least four U.S. cities as well as multiple pilots across Canada.

As well as these school streets, which can be linked back to a common root in Europe, there are also some interesting examples of similar concepts that have emerged independently. In the US, for example, there is at least one school in New York that has closed off the street for over a decade. In addition, in New Haven, New Jersey they close off the entire central street of the small town to enable children to cycle safely to school, in the absence of school buses<sup>53</sup>. It is conceivable that there are other independent community-led examples like this around the world, but it hasn't been possible to identify others for this study.

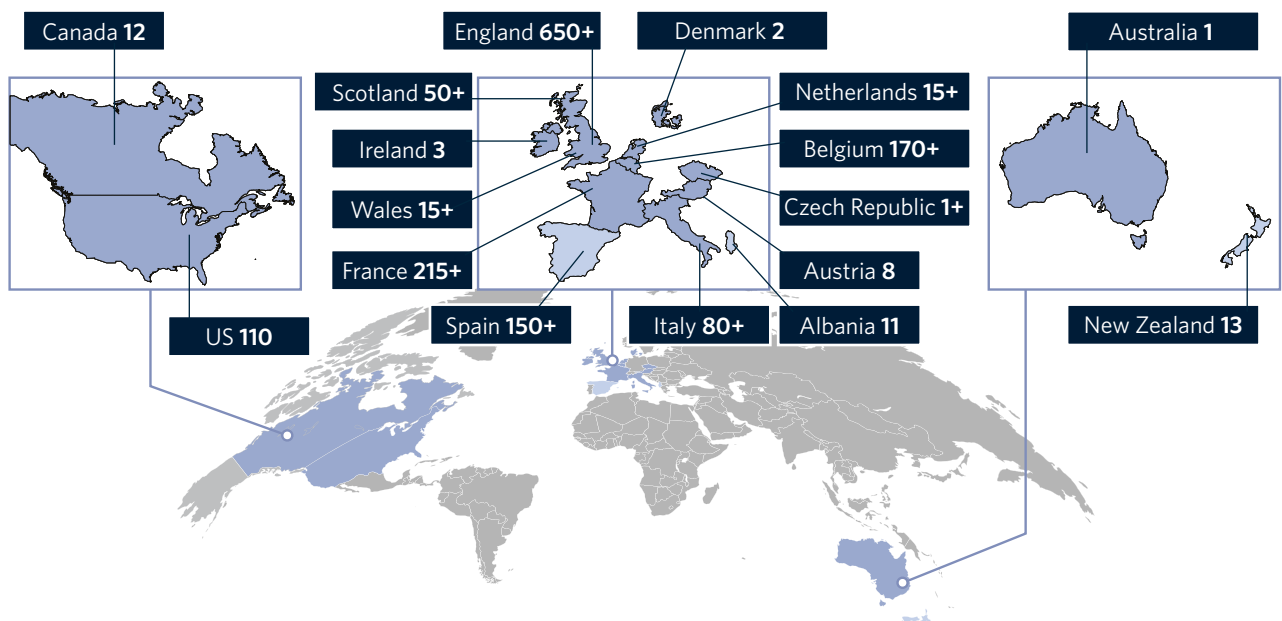


Figure 2

### What about low- and middle-income countries?

Currently, no examples of timed road closures have been found in Africa, Latin America or Asia. The closest example is the school streets programme in Tirana, Albania, which has provided additional space outside schools for playing and walking safely by removing parking spaces and closing one lane of traffic<sup>54</sup>.

One possibility is that 'school streets' operate best in contexts where there is existing infrastructure for safe walking and cycling in place, or where levels of enforcement and compliance with road laws are high. Another possibility is that a lack of evidence or data in developing countries means that people lack the information to objectively understand the impacts that they are experiencing. People may be able to see air pollution or experience its effects but may have no way of quantifying what this means.

Certainly there is work going on in many low- and middle-income countries to create car-free spaces outside schools, it is just that these are focusing on creating basic protected pavements for the first time<sup>55</sup>. However, there is not yet enough information to draw conclusions around this, and it would be good for more trials to take place in these countries.

# IDEAS AND INSPIRATION

## Simple pilots – tactical urbanism

The idea of restricting vehicles from using the road outside school when children are present is both simple and radical. When first presented with the idea, people may have questions about whether it is indeed possible, as cars have become so dominant in many communities. The rise of ‘tactical urbanism’ as a legitimate transport planning tool, as popularised for example by inexpensive and temporary changes to Times Square in New York,<sup>56</sup> has provided legitimacy for bold and experimental pilots that challenge the status quo. In London, it was funding from the ‘Future Streets Incubator Fund’ - launched in 2014 and explicitly inspired by New York, Toronto and Bogota,<sup>57</sup> that funded London’s first School Streets scheme in Camden<sup>58</sup>. The Global Designing Cities Initiative has promoted this innovative experimental approach around the world and included School Streets in its *Designing Streets for Kids* publication<sup>59</sup>. Globally there are also a range of similar ideas and movements, linked to car-free spaces, whether Bogota’s weekly Ciclovía<sup>60</sup> and other ‘open streets’ or slow streets<sup>61</sup> projects that have been replicated in other cities<sup>62</sup>.

## Child friendly cities

The child-friendly cities movement, and related car-free movements are another key ‘thread’ that has influenced the development and uptake of school streets. Internationally there are many policy examples, such as ‘woonerf’ (‘urban courtyards’) in the Netherlands in the 1970s, which give children the right to play in the street in residential areas, and severely restricted cars. These are themselves inspired by earlier (often pre-and post-war) experiments with designing cities for play<sup>63</sup>, in response to the rising numbers of motor vehicles. In the UK, there have been key advocates, such as Tim Gill,<sup>64</sup> who was involved in pilots of ‘home zones’ in the early 2000s,<sup>65</sup> and later written on the city as an ‘urban playground’<sup>66</sup>, as well as the play streets movement established by *Playing Out* in Bristol which has spread across the country<sup>67</sup>. These in turn drew on the 1938 Street Playgrounds Act which enabled local authorities to close certain ‘suitable streets at certain suitable times’ – there were around 750 streets in England and Wales by the 1960s – although these had almost all died out by the 1980s.<sup>68</sup> Internationally, the Child Friendly Cities initiative was launched by UNICEF and UN Habitat in 1996, drawing on the rights of the child, and international commitments to make cities liveable for all<sup>69</sup>. This is now active in around 50 countries,<sup>70</sup> and has been part of a wider movement increasing the policy focus on cities. Rising urbanization in developing countries has made this an important priority for achieving the Sustainable Development Goals, where it is included under SDG11<sup>71</sup>. Other notable reasons for the renewed focus on cities include the Habitat III conference in 2016 which agreed the New Urban Agenda<sup>72</sup>, as well as dynamic initiatives such as the Bernard van Leer Foundation’s Urban95<sup>73</sup> project.

## The right idea for the right time

The need to provide additional space for social distancing due to COVID-19, and also to increase active travel to compensate for lower capacity on public transport, has given school streets additional prominence, and led to rapid expansion of trial schemes in the past two years.<sup>74</sup> In areas where previous pilots have taken place, such as London, there has been a significant expansion from around 80 before the pandemic to over 500 by July 2021<sup>75</sup>, and many other areas have established pilots for the first time. While large numbers of these have been retained beyond the initial ‘emergency’ response, some were only short pilots, or have not been continued after the initial consultation or pilot phase<sup>76</sup>.

## A convergence of policy agendas and focus on healthy streets

Part of the reason for the rapid expansion of school streets has been the convergence of different agendas – while school travel planning to reduce congestion and encourage active travel has been established in local authority transport departments for many years, in London the rise of concerns about air pollution around schools has been particularly important, along with the Mayor’s Healthy Streets policy<sup>77</sup>. School streets were included in the Mayor of London’s Air Quality Audit toolkit as a way of reducing local air pollution around schools<sup>78</sup>.

## Distinguishing school streets from other concepts

While these play-led initiatives have many similarities and shared aims some proponents of school streets are careful to make a clear distinction. The London Borough of Hackney, which has produced a ‘toolkit for professionals’<sup>79</sup> defines a school street as ‘a timed road closure’, and explicitly states that it is not a temporary or occasional closure (such as a one-off special event or ‘play street’)<sup>80</sup>. In the same way (but from a different perspective), in France the ‘rues aux enfants’ campaign released a press release in November 2021 stating ‘Une

rue scolaire n'est pas une rue aux enfants' ('A school street is not a street for children'),<sup>81</sup> highlighting that while there are similarities, a school street does not necessarily allow 'space for spontaneous games' and highlighting the importance of a more fundamental approach to designing cities for children with permanent closures, new greenery and child-friendly spaces.

An interesting question is whether the defining characteristic of a school street is its temporary duration or that it is car free. Depending on the context, each of these criteria are sometimes flexed in different examples. The temporary nature of schemes, which are focused on the key hours at which the roads are used by children, is part of what makes it such a powerful and targeted intervention and can help ease fears about impacts on other groups. However, arguably a stronger definition is that a school street provides car-free space outside schools to support clean air, active travel, social connections and improved wellbeing. While this can be created at specific times, there are also opportunities for this to be achieved more fully through permanent changes, which some cities are embracing. Paris is permanently pedestrianizing and greening 60 roads.<sup>82</sup> Barcelona's 'Protegitim Escoles' ('Protecting schools') initiative include both traffic calming and additional pedestrianised street space - ensuring at least a 10m circumference at entrances with urban furniture, although still allowing vehicles to use the remaining road space.<sup>83</sup> While Denmark doesn't yet have any temporary or timed school streets, it did transform a road outside a school in Vanlose to become an extended schoolyard as part of its 'Race to the schoolyard' project in 2016.<sup>84</sup> The idea of this project was to break down the barriers between the school and the community and maximise the potential for active play and social connections. In Odense, there is also a 'shared space' outside Venlose Skole, which repurposed parking spaces as places to play, with colourful paint art on the street - there are no barriers, but signs indicate pedestrian priority<sup>85</sup>. In other cities, including Tirana,<sup>86</sup> municipalities are looking to open up playgrounds up outside of school hours, particularly in areas that lack access to parks. However, although this is a remarkable example of what is possible, even basic school streets are still a 'building block' from where to start exploring other options to make streets safer and better and can be refined over time with further investment.<sup>87</sup>

In North America, many cities have already adopted 'open streets', which temporarily close streets to vehicles - meaning that they are 'open to people'<sup>88</sup>.

There are a range of related concepts similar to street changes. The main differences are around their primary focus, their duration, scale, and the nature of the change - including whether it is car-free.

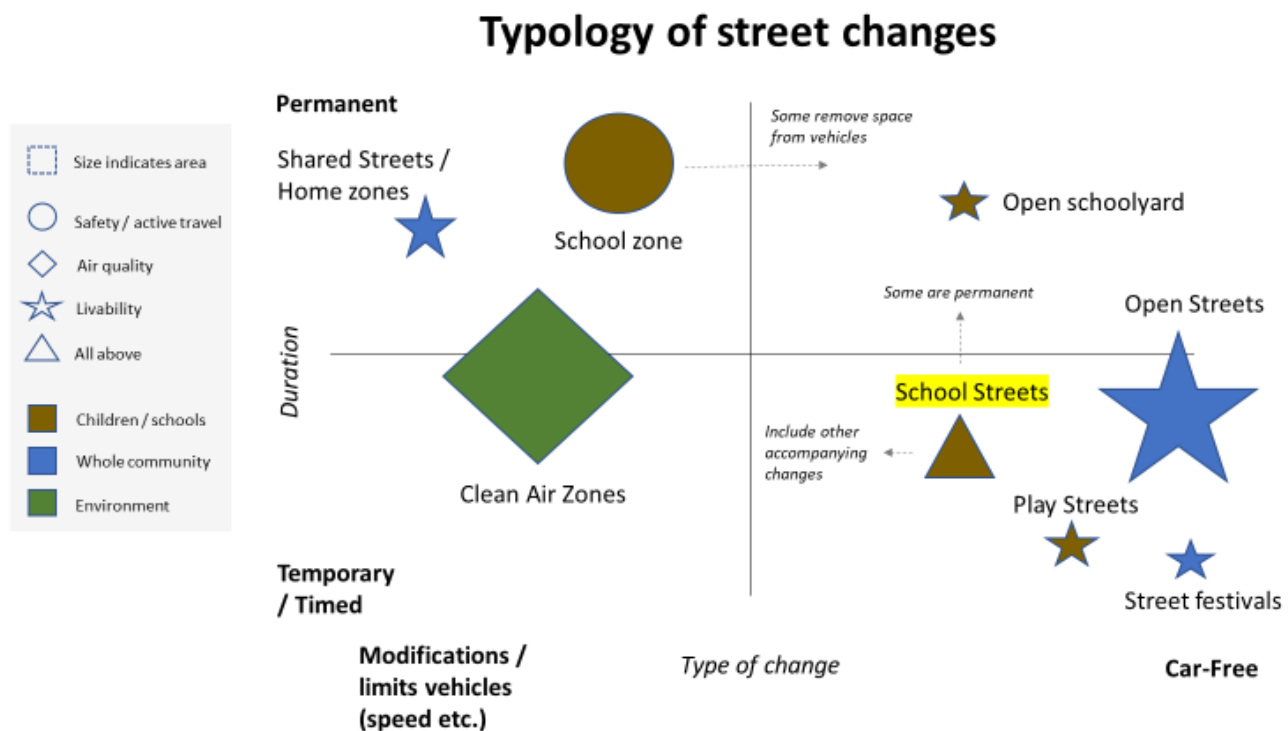


Figure 3

Concept	Relationship with school streets	Typology
School zones	Primarily aimed at ensuring road safety and safe routes to school – include permanent infrastructure, such as traffic calming, safe crossings and lower speed limits (sometimes at specific times), but normally do not restrict vehicle access	Permanent
Home zones (or 'woonerf')	Roads where priority is permanently is given to those walking and cycling, where vehicles are banned or must travel at walking pace. Usually in residential areas – although example of Vestre Skole in Odense, Denmark shows how these can be used outside schools.	Permanent <i>Largely car free</i>
Shared streets	These streets aim to reduce the speed of vehicles and make them attentive to pedestrians by removing traditional markers that distinguish the road from the pavement. Often in public areas with a lot of foot fall. There are no restrictions on vehicles using the space, although they must travel very slowly – e.g. Vestre Skole (Odense, Denmark)	Permanent
Play streets	Temporary timed road closures to encourage play and meeting neighbours – often on residential roads	Temporary <i>Car-free</i>
Open streets	Restrictions on vehicles on certain roads (sometimes timed), often to encourage physical activity, such as 'ciclovía'. Not to be confused with 'shared streets', the idea is that these are 'programmes that temporarily open streets to people by closing them to cars'.	Temporary <i>Car-free</i>
Clean air zones	Restrictions (often city-wide) on the most polluting vehicles	Depends
Open schoolyard	Streetspace outside school is permanently transformed to a place to play, or a schoolyard within the school grounds that is accessible to the community at other times.	Permanent <i>Sometimes car-free</i>
Street festivals	Roads closed for a specific time for a one-off event, often with food, activities and entertainment. While a school street can choose to incorporate these features (often to celebrate the start or for a special occasion), a regular school street does not need to offer these – many similar benefits can come from the additional space to meet and play.	Temporary <i>Car-free</i>

Table 2

# EXAMPLES: LEADERSHIP, INSTITUTIONAL SUPPORT AND DISSEMINATION



Over the past 10 years the rise of social media and more recently webinar technology has meant that simple ideas can be propagated widely around the world. The innovative nature of school streets, which many stakeholders may find unusual or surprising makes it a particularly engaging idea, especially where demonstration projects exist that can be shared. This section looks in more detail at the journey that the areas with the highest numbers of school streets have taken to get there.

## Ghent and Flemish areas, Belgium

Belgium was one of the first countries outside Italy to experiment with school streets. In 2012, the city of Ghent started a pilot project to turn two cul-de-sacs into a school street,<sup>89</sup> and this later spread through other Flemish areas, including Antwerp in 2014. The Flemish Sustainable Mobility Network has helped promote school streets, including sharing good practice<sup>90</sup>. The country had previously introduced a powerful road safety law in 2004 introducing 30km/h zones outside all schools in the country.<sup>91</sup> However, school streets offer a more powerful way to address air pollution and other dangers of traffic chaos caused by the volume of vehicles around schools.<sup>92</sup>

It wasn't until 2018 when they were formally recognized in the highway code that they expanded through the whole of Belgium.<sup>93</sup> The regulations include standard signage and guidance around common exemptions – any exempt vehicles must drive at walking pace and give priority to pedestrians.<sup>94</sup> This coincided with publicity about poor levels of air quality around Belgian schools, and in response to campaigns for action, the government helped establish the 'Ready for the School Street' campaign<sup>95</sup> – a partnership of over 30 organisations,<sup>96</sup> led by the Department of Education. At the end of 2019 there were around 20 permanent school streets and around 30 in pilot in Brussels alone – supported by around 1 million euros of funding – approximately 20,000 euros per school.<sup>97</sup> Currently there are 171 school streets registered with Ready for the School Street.<sup>98</sup>

## London

By far the largest number of school streets are in London - by 2021 there were over 500 school streets. One of the reasons that London was able to expand so quickly is because there was already experience of implementing school streets in many boroughs. School Streets were explicitly mentioned as a potential intervention in Local Implementation Plan guidance to London boroughs for 2018,<sup>99</sup> which determines funding allocations. While the Mayor's current Transport Strategy itself does not explicitly mention school streets, it mentions (in 'Proposal 8') working to "promote one-off, regular and trial closures of streets to some or all motorized traffic so that Londoners can see their streets differently"<sup>100</sup>. In addition, funding for clean air projects also supported their expansion, with the Mayor's Air Quality Fund supporting the expansion of the Hackney School Streets Hotline run by Cross River Partnership's Healthy Streets Everyday project, which was in operation from April to September 2020. This service actively helped 7 Local Authorities with the implementation of school streets, including Haringey, Bromley, Richmond and Brent.<sup>101</sup> Nine boroughs included examples of school streets in their 2019 reporting around actions taken to improve air quality.<sup>102</sup> The Air Quality Fund also separately provided support in 2019 for Redbridge to implement five school streets.<sup>103</sup>

The expansion of school streets from 2016 to 2019 undoubtedly meant that when the Mayor of London was looking to provide additional space for social distancing in early 2020 in response to COVID-19, the knowledge and related processes and technical solutions existed to allow boroughs to expand or try school streets, with funding allocated for 483 more streets in the first round of funding<sup>104</sup>. The guidance for the Mayor's Streetspace fund described school streets as "a key tool in the 'Streetspace for London' plan" and suggested that "School Streets should be considered outside of all primary schools in London". The guidance also drew on existing air quality data and analysis about pollution levels at all schools across the city, and the recommendations from air quality audits to assist the prioritization.<sup>105</sup> Through both the Local Implementation Plans and the Streetspace plan, school streets are therefore implemented as part of a wider package of measures promoting active travel across the wider area. By early 2022, there were more than 500 school streets in London, with 372 introduced since the start of the pandemic, and plans for 80 more in the coming year, subject to funding.<sup>106</sup>

## The London Borough of Hackney

Although the first school streets in the UK were introduced by East Lothian Council in 2012 and then Edinburgh (2014), the London Borough of Hackney has been perhaps the most active advocate of the idea – both within the UK and internationally. Hackney’s leadership in promoting school streets in the UK and beyond can partly be explained by its desire to change its reputation – in presentations on school streets, the Council officers start with newspaper headlines from the mid-1990s criticizing the borough as a poor place to live as one of the few inner London boroughs not on a tube line<sup>107</sup>. Since that time, the Borough has championed active travel, including hosting a series of cycling conferences focused on cycling in London – which have expanded into the London Walking and Cycling conference<sup>108</sup>. Hackney is one of the few London boroughs to have an elected Mayor, which provides a strong political figurehead for the active travel agenda, as well as an activist lead transport member<sup>109</sup>. Hackney’s policies have attracted national media attention, including an interview with the Mayor about school streets on the influential national Newsnight programme in 2018.<sup>110</sup> Hackney also included expanding School Streets as a specific 2018 Manifesto commitment, with a target to roll out to a third of schools by 2020.<sup>111</sup>



## Paris

In Paris, the ‘rues aux ecoles’ scheme is part of a series of bold measures undertaken by Mayor of Anne Hidalgo to tackle air pollution, reduce vehicle journeys (including banning cars from the city centre), and implement a ‘15-minute city’<sup>112</sup>. The first ‘rues aux ecoles’ were introduced in 2019, and the number has expanded to over 150 across the city. Barriers are prominently branded with the city’s ‘Paris Respire’ (‘Paris Breathes’) campaign.<sup>113</sup> Whereas in the UK most ‘school street’ schemes are temporary, in Paris a large number are becoming formalized as pedestrian only roads<sup>114</sup>. In autumn 2021, 11 streets outside schools were permanently pedestrianized, with 3400m<sup>2</sup> of planting and 64 new trees added. Four more permanent pedestrian routes are planned by March 2022.<sup>115</sup> These are part of wider changes known as ‘Embellir votre quartier’ (‘Embellish your district’), which aims to increase vegetation on streets. The other principles are that works should be centred around schools and a quarter

of schemes must be in working class neighbourhoods.<sup>116</sup> Paris also cites reducing noise pollution and reducing the heat island effect in summer, particularly due to climate change, as other important elements of its programme.<sup>117</sup> While it has made significant changes to a number of streets, the campaign group 'La Rue Est A Nous' ('The Road is ours'), has published an Observatory of School Streets,<sup>118</sup> which asked local people to rate the quality of the street, and found that just 27 (9%) of the 300 most polluted nursery and primary schools are equipped with a 'good' quality school street.

## New York

New York's reputation for innovative street changes was established during the time of Janette Sadik-Khan as Transport Commissioner from 2007 to 2013, when 650 kilometers of bike lanes were added as well as more than 60 plazas<sup>119</sup>. Initially, the city implemented 'open streets' and 'open restaurants' in response to COVID-19, but expanded this in the September 2020 to include schools when they re-opened.<sup>120</sup> This included a focus on creating additional space for outdoor learning, and includes both streets and also space in parks and other public spaces.<sup>121</sup> While not badged as 'school streets' the 'open streets: schools' programme shares many of the same characteristics, with no vehicles allowed when in operation.<sup>122</sup> Indeed, stakeholders such as Transportation Alternatives describe it as school streets.<sup>123</sup> The outdoor learning programme includes stakeholders from the DOE, Department of Parks & Recreation, Department of Transportation, Department of Sanitation, Streets Activity Permit Office, FDNY, and the NYPD,<sup>124</sup> and currently is in operation in almost 100 schools with a variety of time restrictions. No vehicle access and no parking is allowed when full closures are in effect, while a 15 foot emergency lane must be clear at all times, for emergency vehicle access.<sup>125</sup> Although the idea of closing roads to vehicles is thought of as new, one school in New York has had one for at least a decade<sup>126</sup>.

## Milan

For the past decade, Milan has pursued policies to reduce the priority of vehicles in its central area<sup>127</sup>. Milan was one of the first cities to implement a complete package of measures in response to COVID-19, reallocating 35km of street space from cars to bicycles, as well as lower speed limits and pedestrian priority streets.<sup>128</sup> Northern Italy was one of the first areas hit by the COVID-19 pandemic, and also has historic issues with poor air quality. The deputy Mayor said "We worked for years to reduce car use. If everybody drives a car, there is no space for people, there is no space to move, there is no space for commercial activities outside the shops.... We think we have to reimagine Milan in the new situation. We have to get ready; that's why it's so important to defend even a part of the economy, to support bars, artisans and restaurants. When it is over, the cities that still have this kind of economy will have an advantage, and Milan wants to be in that category."<sup>129</sup> More recently, it has announced plans to create a 750km network of cycle paths by 2035.<sup>130</sup> The first school streets were introduced in 2012, and by 2019, the number had reached 17, improving the journeys of 9,000 children and closing 2.8km of roads.<sup>131</sup> While there has been some expansion and trials in other cities, the number of school streets hasn't grown as fast as in France, Belgium and the UK. However, new movements, such as 'Tutti Giù per Strada' ('All down the street') are trying to change this, mobilising 60 groups to perform 50 flash mobs in ten Italian cities on a cold November Friday afternoon in 2021<sup>132</sup>.

# FACTORS INFLUENCING EXPANSION

## Evidence supporting impact of school streets

The fact that so many school streets have been successful has encouraged others to imitate the idea. There is an increasing body of evidence that documents the impact school streets, including a 2020 review by Edinburgh Napier University that collated data from a number of examples from across Europe<sup>133</sup>, as well as an increasing amount of evidence from individual areas. This found that in most cases the number of vehicle journeys to school reduced, active travel increased, and were generally supported by parents. It was hard to draw firm conclusions about the impacts on road traffic injuries, but there had yet to be any across all of the sites.

In London, Transport for London (TfL) has provided detailed guidance about the type of data to collect from the Streetspace schemes,<sup>134</sup> to help inform whether these should be made permanent at the end of the 18-month experimental phase. In London, the FIA Foundation and Bloomberg Philanthropies funded an evaluation of the air quality impacts of school streets in 2020/21. The study involved 30 sensors at 18 schools, measuring levels of nitrogen dioxide. Closing the roads at drop off and pick up times reduced NO<sub>2</sub> levels by up to 23%. The study also found that parents are supportive of the schemes, with 81% believing that the scheme was suitable for their school, and 77% supporting that the changes be kept in the long-term.<sup>135</sup> A detailed review into school streets in Flanders found strong support for school streets, and a shift to active travel – which was highest in older age groups of children.<sup>136</sup>

### A positive experience

Overall, the feedback from parents, children and communities about school streets is overwhelmingly positive. While Hackney's toolkit makes it clear that school streets should be distinguished from one-off play streets, or special events outside schools, there may be advantages in 'activating' a pilot by organizing activities to engage children and parents and get them to see their streets differently. In many cities the desire to create a positive experience has also involved additional activities or programming. For example, in Los Angeles dance, jenga, chalk art and a mobile library were put on.<sup>137</sup> At a 'taster day' in Brighton, children playing said 'I wish it could be like this every day' – and shows the power of a positive first impression.<sup>138</sup> In Albania, the full importance of the additional street space was only really understood by the community after the implementing NGO threw a party in the space<sup>139</sup>.

## Support for expansion

### Networks

Internationally, the presence of elected Mayors in global cities also provides a sort of competition to be dynamic and innovative – something which organisations such as C40 foster through knowledge exchange and peer learning.<sup>140</sup> In response to COVID-19, there was a pressure to implement measures to create additional space for social distancing and capacity to replace public transport. European cities like Milan, Paris and London all took bold moves to implement new cycle lanes and explore other innovations.<sup>141</sup> In North America, 50 cities incorporated temporary cycle lanes, and 34 pursued 'open street' policies of restricting vehicle traffic on roads<sup>142</sup>. It also included school streets in its *Streets for Pandemic Response and Recovery* guide<sup>143</sup>, which has now been translated into 10 languages.

The *Car-Free Megacities* campaign has sought to formalize this competition by ranking London, Paris and New York on a series of indicators, one of which is the number of school streets.<sup>144</sup> Similarly, the Clean Cities Campaign has a ranking of European Cities on a number of indicators of clean transport, including 'space for people'<sup>145</sup>.

Bold leadership by the Mayor of Tirana, particularly focused on improving the lives of children, has allowed the city to get a significant amount of international attention and funding, including for school streets<sup>146</sup>.

### Toolkits

The fact that school streets have now been tried in many different contexts and are popular is itself powerful evidence to persuade others to try it. Indeed, this is perhaps one of the reasons why toolkits and guides have been created in different contexts, to codify and create a reproduceable template, drawing on the experience of others. 880 Cities developed its own toolkit in 2019,<sup>147</sup> which states it was inspired by the United Kingdom, and Ireland. Other toolkits and guidance exist, including in Wallonie (Belgium)<sup>148</sup> and Italy (translated as 'School Streets: New Squares for Cities')<sup>149</sup>, as well as Hackney's toolkit for professionals<sup>150</sup>, and an independent online school streets website, primarily focused on the UK, that aims to provide 'all the information in one place'<sup>151</sup>. [See annex for a list of toolkits.]

## A growing awareness of the environmental impacts of emissions

### Air quality concerns

It is interesting to note that the expansion of 'school streets' so far has been most significant in the UK, Belgium, France and Italy – when other Northern European countries such as the Netherlands or Scandinavia are traditionally seen as leaders on active travel. There are likely to be a couple of reasons for this – these other countries already have a strong walk and cycle to school culture, and active travel infrastructure, so school streets may be less necessary, and they may also not have the same issues with air pollution which is another strong driver of change for many of the cities that have led the way. London, Paris and Milan have all had recent issues with poor air quality – particularly due to the expansion of diesel vehicles across Europe a decade ago that led to high levels of NO<sub>x</sub> pollution – and have been taking a series of measures to address this and make space for active travel to promote clean air.

In Belgium, a group called 'Filter Café Filtre' led a high profile campaign to improve air quality around schools, following a Greenpeace report in 2018 that found that only 3% of Belgian schools had good air quality, while 61% were rated inadequate, including five schools that had illegal levels.<sup>152</sup> This led to a campaign to do more to restrict access to cars from roads around schools.<sup>153</sup> It started with a group of parents who instead of going for a morning coffee, decided to close off the road outside their children's school to vehicles. Over the next two weeks, 42 more schools joined in. A year later it had spread to 21 cities, closing the road outside 76 schools. A report in the Guardian describes how with "hazard tape from DIY shops, banners and musical instruments, they close the roads around about 76 schools. Children play in the street and the parents drink coffee together to demand traffic-free zones, better walking and cycling routes and public transport so children do not have to be driven to school."<sup>154</sup>

In Italy, the 'Tutti Giù per Strada' movement has been campaigning for action around schools.<sup>155</sup> It is the Italian initiative of Clean Cities Campaign to promote school streets. The Clean Cities Campaign is a coalition of organisations promoting active, shared and electric mobility hosted by Transport & Environment<sup>156</sup>. Together, they are sharing experiences between countries and a mass mobilization planned across Europe for 6 May 2022.

Another member of the Clean Cities Campaign that has been prominent is 'Mums for Lungs' in the UK, which has been raising awareness of the impacts of air pollution in creative ways, such as a 'Clean Air Advent Calendar'<sup>157</sup> and an air pollution art trail<sup>158</sup>. They have produced a campaigning guide<sup>159</sup> for School Streets, a report analysing the potential for School Streets with Possible<sup>160</sup>, and played a prominent role in the expansion of school streets in London and beyond<sup>161</sup>.

### Climate change: awareness and activism

A fundamental thread that has influenced uptake of such schemes is the desire to respond to the climate emergency and enable children to experience some of the changes that are necessary to decarbonize travel. The student-led 'Fridays for Future' or 'School Strike for Climate' campaign, initiated by Greta Thunberg,<sup>162</sup> has been truly global, and many activists for school streets cite this as a motivation for action and as a way to show children that they are being listened to.<sup>163</sup>

In Spain, the 'Revuelta escolar' movement, led by the association of student family associations, has led protests demanding the closure of streets adjacent to schools. Every 15 days the protests closed down streets around schools. The movement spread from Barcelona to other cities, including Madrid, Bilbao and Girona – in total there were more than 75 groups in eight cities.<sup>164</sup>

### Role of children and young people

As the Climate Strike movement shows, young people are often at the heart of protests about emissions and are frequently involved in the development of school streets. For example, pupils addressed Council meetings on school streets and the climate emergency in Haringey (London),<sup>165</sup> or supported the roll-out of the scheme, such as speaking to people at the road closure barriers in Zwolle (Netherlands),<sup>166</sup> or taking part in participatory workshops in Paris.<sup>167</sup> In Toronto (Canada) the pupil eco-team were involved in planning the event and took part in media and publicity on the pilot.<sup>168</sup>

In some cases, the role of children in the development of school streets is not always clear. In response to COVID-19 many of the schemes were led by parents, teachers and council officers, and it is sometimes primarily adult voices who are heard in subsequent consultations. It is important that children understand the reasons for school streets and get to experience its benefits, but also that they can help shape decisions where appropriate.



# KEY PRACTICAL FACTORS IN DEVELOPMENT OF SCHOOL STREETS



## Road laws and legal frameworks

One of the fundamental factors influencing the development of school streets is the technical legal and administrative frameworks that permit restrictions. The road laws and highway codes in each country have all developed differently over time and may or may not have provision or processes for arranging regular or temporary restrictions.

- In the UK temporary pilots for road changes are permitted for up to 18 months without full consultation to allow time for evidence to be gathered, and it is on this basis that most are undertaken, with the legal change to the rules implemented through a traffic management order, which specifies the details of the closure<sup>169</sup>.
- In Belgium school streets display standard signage and moveable barriers are placed across the road. Any drivers exempted to use the road must do so at walking pace, leaving space for pedestrians and cyclists, giving them priority and stopping if necessary. The drivers of motorized vehicles must not endanger pedestrians and cyclists or cause a hindrance to them<sup>170</sup>. At least one person is on site during the closure period at each access point - the people in charge of the barriers must receive training from the local authority and police. Sometimes retractable bollards are used instead of a barrier, which removes the need for a supervisor, as these can be managed remotely - but are relatively more expensive.<sup>171</sup>
- In France, streets are often closed by barriers, or gates that can be moved if needed. There is still active discussion about how best to formally incorporate the concept of school streets in the highway code.<sup>172</sup>
- In North American pilots, one of the first tasks 880 Cities undertook in Toronto was to understand what local authority forms were needed to be completed in order to apply to close the street, as most existing processes assumed a one-off street party or event. One of the reasons the pilot was only 4 days was that this was the maximum time that could be approved without needing to go to a local community forum. In time, they hope to work with the city to create a simplified process for applying in future.<sup>173</sup>



## Signage

In Edinburgh, they rely purely on road signage to legally restrict vehicles, with support from the police in enforcement. In England some Councils have struggled to enforce school streets, with parents in Nottingham ignoring the signs and planters narrowing the road, causing additional safety risks<sup>174</sup>. Scotland and London both illustrate how different legal powers affect the design of schemes. In Scotland, it is legal to use a flashing sign, that illuminates at the times at which the school street is in operation, but these are not currently allowed in England.

Belgium has its own dedicated school streets sign, which is an existing 'C3' traffic sign with a blue bar saying 'Schoolstraat' underneath.<sup>175</sup> In Bolzano, Italy, a "no access" sign, with the hours of operation and exemptions listed, is used, following a decree by the Mayor in 2013.<sup>176</sup> There is not a standard 'school streets' sign in England, but it uses existing vehicle restriction signage, with information about the restrictions underneath. Some have complained that more can be done to make these more visible, such as having a yellow background to help them stand out, and ensure motorists see them.<sup>177</sup>

## Means of enforcement

Another key practical consideration is how the school streets are practically 'closed' to traffic and enforced. While pilot schemes typically use temporary barriers to physically block roads to traffic, in different school street areas there are a range of ways that they are enforced. The original school street schemes in Bolzano, Italy have developed an established system of paid crossing guards to physically close roads with barriers and assist children on their way to school, while enforcement activities are carried out by the police.<sup>178</sup> Other cities implementing school streets with physical barriers typically rely on volunteers, often recruited from parents or teachers to close the barriers<sup>179</sup>. The 880 cities trial in Toronto used a simple barrier pieced together from plywood, and relied on community volunteers to set up the barriers and then act as road marshalls in reflective vests<sup>180</sup>. An issue with this is retaining sufficient volunteers,<sup>181</sup> and organizing schools or groups may require public liability insurance<sup>182</sup>. Some schools on small roads or one-way streets, such as St John's school in the London Borough of Camden<sup>183</sup> and St Mary's in Southampton<sup>184</sup>, have used folding bollards to prevent vehicles from entering the road.

In Albania, the city decided it was too difficult to enforce a temporary closure, and so have decided instead to close part of the road, removing one lane of traffic and making the road one way, using heavy concrete bollards to protect the car-free area.<sup>185</sup>

In London, a large number of school street schemes are enforced by the use of automatic number plate recognition (ANPR) cameras, which are used alongside permanent signage that indicates the hours of operation. However, historically English Councils outside London have not had the powers to use ANPR to enforce moving traffic offenses, and so this hasn't been an option – although this has recently changed.<sup>186</sup> Fines from automatic enforcement is also potentially a source of revenue for Councils, which can help to subsidise the upfront cost of the cameras, although this can also fuel opposition if they are seen as a 'cash cow', primarily motivated by raising money.<sup>187</sup>

Consideration	Option	Example
Signage	Temporary signage for pilots	Canada, US, France
	Permanent signage (in line with national standards)	UK, Belgium
Enforcement	Barriers and volunteers	Belgium, UK, US, Canada
	Barriers and paid staff	Bolzano
	ANPR	London e.g. Hackney
	Signage only - police	Edinburgh (flashing signs)

Table 3

## Campaigners and advocates

While political leaders have played a key role in rolling out school streets, there have also been a wide range of other stakeholders and campaigners who have supported the idea and advocated for or led trials, and in many cases are pivotal to their success.

- In England, active travel campaigners Living Streets<sup>188</sup> and Sustrans<sup>189</sup>, and pollution-focused Mums for Lungs and Friends of the Earth<sup>190</sup> have supported the idea and provided resources for local people to ask for them at their schools. In May 2020, the FIA Foundation was one of a group of 10 NGOs led by Global Action Plan that called for urgent implementation of school streets in light of schools re-opening after lockdown in the UK.<sup>191</sup> Individuals have also started their own resources to amplify the idea, such as [schoolstreets.org.uk](http://schoolstreets.org.uk).
- In France, the League Against Cancer has actively promoted the idea,<sup>192</sup> and 'La Rue Est A Nous'<sup>193</sup>, a shared initiative of 13 organisations initiated by Alternatiba Paris has been monitoring the implementation, including establishing an Observatory of School Streets to rate their quality<sup>194</sup>.
- There is also a Flemish campaign led by Octopusplan<sup>195</sup> to promote school streets, called *Paraat voor de schoolstraat* ('Ready for the School Street').<sup>196</sup>
- In Italy, *Tutti giù per strada* was launched to promote school streets in Italy in 2021 and has undertaken flash mobs and action at 50 schools<sup>197</sup>. This is led by Anna Becchi who had earlier started a local campaign and blog<sup>198</sup>.
- Across Europe the Clean Cities Campaign is co-ordinating with activists in Italy, Spain, Belgium and the UK.<sup>199</sup>
- In Canada 880 Cities has partnered with a range of local partner organisations and accessed funding for green travel.<sup>200</sup> 880 Cities have also documented a number of case studies and produced a toolkit and an online knowledge portal<sup>201</sup>.
- In the US, there are established programmes promoting Safe Routes to School in many areas<sup>202</sup>. The Minnesota Safe Routes to School partnership produced a guide to school streets, but although several communities have discussed the idea, none have yet come to fruition<sup>203</sup>.

## Popularity and opposition

The roll-out of school streets has been generally popular. Most surveys show that after implementation, most parents support the scheme<sup>204</sup>. In general, authorities tend to put forward schools that they think would be a good fit for the schemes, although in a few instances, schemes have not been implemented due to a lack of support.

In London, wider 'Low Traffic Neighbourhood' (LTN) schemes, which prevented drivers from using side streets as cut through routes, have been controversial, and there has been some legal challenge.<sup>205</sup> One criticism is that by concentrating vehicles on main roads it increases congestion and pollution on these routes. There is also potentially an equity issue, as people living on main roads are often those suffering higher levels of deprivation and have to suffer worse air quality<sup>206</sup>. However, analysis suggests that the areas chosen for LTNs were more likely to have the most deprived quarter of people living there than the least deprived quarter.<sup>207</sup>

In France, the proposed road closures outside schools in Grenoble, were suspended by the administrative court after objections.<sup>208</sup> Subsequently, they reopened with more flexible access rights for those living or working in the immediate vicinity.<sup>209</sup> However, the fact that school street schemes are local to schools, and are attempting to improve the health of children, means that they are generally popular, and the fact that they are trialed as pilots means that there is an opportunity to modify or not continue individual schemes if issues arise.

One factor that can be important is the proportion of pupils that already walk and cycle, and the potential for others to do the same. For inner-city locations like Hackney the proportion who walk and cycle may be quite high already, and so there is a strong argument for protecting them from vehicle drivers. In more rural areas, or in areas such as outer London where distances travelled to school may be higher, there is more of a risk of displacement of vehicles to other roads. However, many pilots are able to manage this successfully through the provision of 'park and stride' schemes. For example, Leeds has provided a map showing a 400m buffer around the school and alternative walk and

stride routes.<sup>210</sup> In Belgium, there is a concept of a 'step spot', which is where parents can drop pupils some distance from the entrance, and they all walk in together under the guidance of a parent or teacher<sup>211</sup>.

## Equality and access concerns

An important consideration is ensuring that people with additional needs or mobility requirements are able to access school without facing additional burdens. In most cases these can be resolved by an exemption to allow vehicles to travel to the school gate. Some groups, such as those with a visual impairment or using a mobility scooter, may find it easier to navigate a school street. People with a sensory difference are likely to also see positive benefits as a result of the calmer street space outside the school.<sup>212</sup>

## Differences in context

School streets have been applied in many different countries, with different legislation, road traffic laws, infrastructure and cultural norms. These differences affect the detailed design of schemes, and consideration of supporting measures.

### 1. Rural areas

Most schemes have been implemented in cities or towns, and there may be differences for rural areas – particularly where walking and cycling infrastructure is lacking and people have to travel longer distances. In these cases, 'park and stride' schemes may be a good strategy, where there is the option of a safe walking route from a local car park to the school, or one can be created. Leeds in the UK has included an interactive map with park and stride routes<sup>213</sup>. Wider improvements for walking and cycling could also be considered, such as lower speed limits and safe crossings and pathways.

### 2. School buses

School buses are common across North America, but are also important in other settings, such as rural areas in the UK. In this case, a decision based on local context should be made about whether the school bus is able to enter the school street, or whether there is a suitable location for children to be 'dropped-off' near the entrance to the road closure, and for them to walk along the 'street street', as has been done in Canadian pilots. At Mountview school in Toronto, buses were temporarily moved to the adjoining street, allowing them to incorporate a little extra physical activity into their day.<sup>214</sup>

## Participatory approaches with children

The urgency of the response to COVID-19 meant that in many recent cases it wasn't possible to consult or involve children in the initial decision-making around school streets. However, there is a history of participatory approaches enabling children to co-design safety improvements to the roads outside schools to encourage active travel.

In the UK, Sustrans often take a co-design process to informing changes,<sup>215</sup> and similar approaches to working with children have been undertaken from Canada<sup>216</sup> to Mexico<sup>217</sup> to India<sup>218</sup> and beyond. It is important to consider how children's voices are heard in the decision-making process, and also to reflect what additional insights they may offer. In the past it may have been easy to dismiss the idea of making streets car-free if children suggested it (indeed it is interesting to note that children suggested the idea in participatory exercise in India, but it was not taken forward<sup>219</sup>). However, now the school streets concept has increasing legitimacy and is proved to be feasible, it is expanding the scope of what is seen as possible. The *Designing Streets for Kids* guide has recommendations for how to engage children and ideas about different engagement methods.<sup>220</sup>

## Costs

The issue of funding is an important one – while relatively cheap in terms of transport budgets, some resources are still needed. The total cost of the 405 school streets funded by the first phase of London's Streetspace programme was around £3.8 million, which equates to just under £10,000 a school street – although the range was from less than £1,000 to £48,000<sup>221</sup>. The differences may be explained by the types of schemes, and the complexity of their designs (and in some cases the Council may be putting in additional resources from its own budgets on top of

## KEY PRACTICAL FACTORS IN DEVELOPMENT OF SCHOOL STREETS

this)<sup>222</sup>. Hackney's School Street toolkit estimates that the costs are between £5,000 and £50,000 (excluding staff time), with enforcement cameras themselves costing £20,000<sup>223</sup>.

Clearly the need for urgent social distancing and the desire to 'build back better' and prevent a vehicle-led recovery in 2020 gave a real pressing imperative to rolling out the school streets, at a time when many more business-as-usual activities were paused, but the rapid growth does show that a simple, replicable model is able to expand rapidly. Hackney has been able to expand to the point where nearly every primary school in the borough now has a school street<sup>224</sup>. There is the opportunity, as trial periods end, to also consider more permanent pedestrianization of streets, as is being considered for St Luke's School in Tower Hamlets.<sup>225</sup>

### Greening and biodiversity

While temporary road closures do not fundamentally change the road space, in areas where they have permanently closed roads to cars outside schools, such as Paris, Barcelona and Tirana, there is the possibility to also plant additional trees and reduce the proportion of the street covered by tarmac, reducing heat island effects and surface run-off - both important for mitigating the impacts of climate change, as well as creating additional shade for people walking. At Gjon Buzuku school in Tirana, a 'baby park' has been created, with new mature trees, a play space, seating and lighting. In this project % shade increase and % asphalt area reduction are key impact measures.<sup>226</sup>



# AREAS FOR FURTHER EXPLORATION

## What about low- and middle-income countries?

Currently most, if not all, school streets have been undertaken in Europe and North America. The reasons for this appear to be primarily due to the natural expansion across different territories, with the idea expanding to parts of Canada and the US with strong connections to Europe and experiencing similar issues – including an awareness of air pollution levels around schools.

An obvious question is how school streets could also be implemented in low- income settings. As a low-cost intervention, they appear to be particularly attractive. While there may be additional challenges over high-income settings due to limited institutional capacity, there is a need take steps to create safe and healthy routes to school, and these shouldn't need to wait. It is far better to get basic policies and infrastructure in place now that give priority to children and develop these further over time than try to retrofit everything later.

There are inspiring examples of organisations that have undertaken action to reduce road safety risks around schools – such as Amend's School Area Road Safety Assessments and Improvements (SARSAI) programme in Africa, which is proven to reduce injuries and was the winner of the inaugural Ross Prize for Cities<sup>227</sup>. The Star Rating for Schools App is another tool that enables schools to lower road traffic injury risk,<sup>228</sup> suggesting physical changes to road layouts that create safe or protected pavement space (often for the first time). These can be thought of as a form of 'school street' as they create additional car-free space for pedestrians, such as in Luta Continua Primary School in Maputo, Mozambique<sup>229</sup>. For more information about a range of tools available to assess and plan interventions, see the Child Health Initiative's Safe and Healthy Routes to School toolkit<sup>230</sup>.

Conversations with Child Health Initiative partners give some indications about potential challenges, although some of these are universal and can be overcome. The organization EASST, which works in Eastern Europe and Central Asia did attempt to engage partners in Kyrgyzstan with the idea of school streets, but they had a lot of resistance locally and felt that the community was not ready to accept restrictions on vehicles<sup>231</sup>. It has, however, produced a toolkit for implementing school zones, which it has successfully implemented.<sup>232</sup>

Other partners also considered that there might be reluctance among governments, particularly if there was not already a basic commitment to investing in road safety. Legislation could also potentially be a challenge, along with enforcement, and while it is possible to change these, it is a long process. There may also be powerful groups of road users who might object and influence the authorities.

In Tirana (Albania), however, they have had more success. As part of GDCl's Streets for Kids programme they worked with the municipality of Tirana through the non-profit Qendra Marrëdhënie to develop an interim intervention around one school. After a successful pilot, they received additional funding from GIZ to scale it up to 10 more sites, which have now been approved.<sup>233</sup>

### Asia

In Asia, there are also examples of road safety initiatives around schools and car-free zones although currently no road closures outside schools for school streets. In South Korea, school zones have been hugely successful, reducing fatalities by 95% between 1988 and 2012<sup>234</sup>. In Cambodia, The Ministry of Public Works and Transport and Ministry of Rural Development actively support the implementation of Safe School Zones, and are implementing projects with funds from development partners, such as the ADB and World Bank. In Vietnam there has been a gradual increase in initiatives to increase the number of pedestrian-only zones in urban centres. In Hanoi, one organisation (Mission Green<sup>235</sup>) piloted a designated painted 'lane' for walking for students going to school in a narrow street dominated by motorbikes<sup>236</sup>. In India, WRI have created 'safe school zones' providing designated areas for walking and waiting, pick-up and drop-off zones, child-friendly spaces with playful elements and a vibrant pedestrian crossing<sup>237</sup>. It describes the key elements of a safe school zone as:

- Entrance delineation of school zones
- Road markings and signage
- Vibrant pedestrian crossings
- 'Bulb outs' for waiting
- Speed calming measures
- Vibrant footpaths<sup>238</sup>

## Africa

In Africa, there have been a number of 'open streets' pilots, and regular activities are now held in Cape Town (since 2013), Kigali (since 2016), as well as cities in Uganda, Kenya and Ethiopia.<sup>239</sup>

In 2018, participants got together from 11 countries to discuss the potential of open streets<sup>240</sup> While school streets are a different concept, there may be lessons that can be drawn from these, in terms of getting approval for temporary road closures and learning to apply to some of the logistics involved.

## Latin America

Open streets in many ways started in Latin America with Bogota's *ciclovía*<sup>241</sup>, which have been replicated around the world, including Delhi's Raahgiri Day initiative.<sup>242</sup> There are open streets in at least 77 Latin American cities, and these have been shown to provide important health benefits from increased physical activity<sup>243</sup>. Several projects have also removed road space around schools and given it to pedestrians in order to increase road safety. The Bernard van Leer Foundation have also experimented with 'children's priority zones' in Bogota,<sup>244</sup> while Fundación Botnar has a *Vivo Mi Calle* (VMC) to create safe spaces and routes for adolescents.<sup>245</sup> In Mexico City, ITDP led a tactical urbanism intervention around a secondary school, which included narrowing the roadspace at crossing points and junctions, as part of a Vision Zero for Youth project.<sup>246</sup> Given the experience of car-free events across the region, there is considerable potential for school streets to be applied.

## When and how to implement school streets?

There is a question about whether school streets are appropriate as a 'first step' in making roads safer around schools. Certainly, they are a relatively low-cost temporary intervention and may be appropriate where speeds are already low and there are large numbers walking and potential conflicts with vehicles. The evidence suggests that where school streets are implemented as part of a wider shift towards walking and cycling, through the creation of city-wide networks, 20mph/30kmh limits and infrastructure changes, there can be significant benefits across a range of areas<sup>247</sup>. However, even in cities such as London and Paris, they have not yet been implemented at every school, and there remain some that appear less feasible – often those in areas that have the highest levels of pollution and road traffic risks.

Another possible reason why there is less demand for school streets is because the data on air pollution around schools in many countries is very poor or non-existent. Several projects are aiming to change this, including work by Clean Air Asia in India as part of its Schools for Clean Air Project<sup>248</sup> which has found a sudden rise in pollutants around schools during the morning hours due to vehicle emissions<sup>249</sup>, and the TRUE (The Real Urban Emissions) project which is increasingly carrying out remote sensing of vehicle emissions in low- and middle-income countries.<sup>250</sup> In 2016, schools in London, Delhi and Nairobi collaborated on a joint project<sup>251</sup> to pilot using a 'Clean Air 4 Schools' toolkit<sup>252</sup> that had been developed by the London Sustainability Exchange (now part of Global Action Plan). The material was later adapted as a Connected Classrooms resource on air quality by the British Council aimed at fostering joint learning between schools around the SDGs.<sup>253</sup> In the UK, the 'School Run Scandal' resource also aimed to engage school children about the causes of poor air quality and challenge the dominance of vehicles.<sup>254</sup>







# CONCLUSIONS

Globally there are now well over a thousand school streets in operation around the world in more than a dozen countries. The rapid expansion in recent years, in part triggered by the need for greater space for social distancing, as well as converging movements around child-friendly cities, healthy streets, active travel, tackling air pollution and the climate emergency, has led to many pilot projects. Attempting to track them all globally is a challenging task – particularly as they go through pilot phases and not all are made permanent. However, the sheer range of stories is inspiring, and most have proved popular and successful.

## **A better experience everyday**

School streets reduce pollution, improve safety, provide additional space for social connections and play, and encourage walking and cycling (and reduce vehicle use) – supporting safe and healthy routes to school.

One of the strengths of school streets is that they are regular, and children can get into a new routine, with the impact of permanently changing behaviours. While it doesn't call itself a school street, the example of Fair Haven, New Jersey is the same concept taken even further – the central road through the town is closed each day in the morning and evenings to allow children to safely access school by walking and cycling, as there is no school bus, creating a unique active travel culture.<sup>255</sup> Indeed this is perhaps more radical, as it goes beyond the streets on the school boundary to provide a safe route through the whole town.

## **A powerful idea that brings together different groups**

The 'neutral' language of 'school streets', with a focus on children and enabling their safe and healthy journeys to school is a core strength of the concept. The 'neutral' language also allows it to transcend different interest groups. For example, as well as funding from school travel or transport and air pollution, they have also been funded by physical activity projects. In Exeter, Sport England's 'Live & Move' programme aims to help families be more active in everyday life and was adopted in three schools.<sup>256</sup>

## **A simple, low-cost and replicable concept**

The approach of piloting the schemes enables children, parents and local residents to experience the concept in operation. For children, it also allows them to experience a car-free street, and their positive feedback is often critical in helping make the schemes permanent. Codifying what a school street is through toolkits has created a replicable 'cookie cutter' concept that has been proved to work, and builds on previous learning. This helps to cut through inertia, and simplifies the challenges of attempting to implement something that is potentially complex.

## **The right idea for the right time**

When mapping the growth of school streets, the chart shows an exponential increase that takes off and accelerates rapidly in 2020, as authorities sought to respond to the COVID-19 pandemic. School streets were a quick, low-cost solution that provided space for social distancing, and additional capacity for helping people move efficiently and safely without needing to rely on mass transit. As Duncan Green observes in his book 'How Change Happens', change is rarely linear or continuous:

*"Change in complex systems occurs in slow steady processes such as demographic shifts and in sudden, unforeseeable jumps. Nothing seems to change until suddenly it does."<sup>257</sup>*

This is certainly the case with school streets. Where once authorities might be reticent to consider new ideas, there is now a new urgency to consider alternatives. The pandemic also brought into focus our mortality, and allowed people to experience a counter-factual without noisy vehicles polluting the air. As Annurita Roy eloquently wrote, 'The pandemic is a portal... a gateway between one world and the next.'<sup>258</sup> While some schools that piloted school streets decided not to continue with them after a few months, the vast majority have decided not to go back to how things were before.

# RECOMMENDATIONS

## 1. Put children first – make school streets for kids

School streets prioritise children over cars. It sounds simple, but it is strange that the dominance of private vehicles has not been questioned more, when it is putting children's health at risk. School streets are popular, and people enjoy their benefits. They help build connections, support networks and help people enjoy life. School streets are a simple, low-cost concept which any authority can try.

With the number of people living in cities rising rapidly globally, along with the increasing number of vehicles, more and more countries will need to take action to ensure safe and healthy routes to school for all children. Not every street can be made completely car-free, but all streets can take action to introduce safe speeds, such as 30km/h (20mph) limits, and take measures to support walking and cycling such as wide pavements, dedicated cycle lanes infrastructure, and appropriate places to cross.

In some ways, the safety of routes to school are a test of how much a society prioritises active travel and the health of children – recognizing that in some country contexts, the nature of poverty means that there are multiple urgent challenges to be overcome. School streets offer a way to put children first.

## 2. Invest in active travel – healthy people, healthy planet

Children are the future, but so is our planet. Protecting children's health and reducing exposure to harmful emissions is vital to prevent respiratory illnesses that could lead to premature death or significantly reduce people's quality of life across many years. Preventing road injuries prevents serious trauma, healthcare costs and permanent disability. Streets that put people first save lives.

The need to cut emissions and transform the way we move around is equally urgent. Transforming the way we move around the city by supporting walking, cycling and mass transit has multiple benefits, including making us healthier, but it is also good for the planet. Children's voices are often the loudest and most persistent when it comes to speaking out on climate change, and school streets show that authorities are listening and care for our collective future. Investing in safe infrastructure for active travel across the whole community means everyone benefits.

## 3. Pilot – Try new things, learn from others, and make new connections

School streets and other 'tactical urbanism' approaches are relatively low cost but have a big impact. With the rise of social media and webinars, we now have access to a lot of examples and expertise from around the world and it is possible to move fast to replicate and scale ideas that work.

To achieve the United Nations' Sustainable Development Goals (SDGs) we need to work together and learn from a range of experts in order to make streets safer, cleaner and healthier. The Child Health Initiative brings together expert partners from around the world to address these issues. Achieving the New Urban Agenda's priority of a 'safe and healthy journey to school for every child' (para 113.), requires making streets safe for kids by lowering speed limits, making active travel attractive and ensuring coherence between different policy areas.

## 4. Be ambitious – bold leaders change lives for the better

Around the world Mayors and local leaders are being bold and experimenting with transforming streets. Ultimately although temporary schemes are good for showing what is possible, there needs to be permanent institutional solutions, whether through technology, funding or a wider cultural change, influenced by modifications in the urban realm to prioritise walking and cycling, tackle air pollution and road traffic danger, and ensure streets are places for people. By permanently closing streets to vehicles, Paris is also able to plant more trees, which will have a range of other climate and environmental benefits.

In a number of cities, thanks to bold leadership from Mayors, these changes are being made permanent, and part of a wider network of active travel infrastructure, and shift towards child-friendly cities. The language of 'school streets' and shared concept provides a model for others to replicate, and a vision for the future. The 'school streets' language also normalizes the idea of car-free areas outside schools – and stories and films from Bolzano or (the less well known) Fair Haven, New Jersey, where these schemes have been in place for many years show what a difference such a long-term vision can have.

## 5. Use the power of networks – take a city-wide approach

In order to support a wider switch to active travel and reduce vehicle use, it is important that areas away from schools are safe as well. Complete walking and cycling routes have a far higher benefit than the sum of the individual sections on their own.

The COVID-19 response led cities to act fast to boost the mobility system and create additional space for social distancing. Cities such as London and Paris have introduced school streets as part of a wider package of measures across the whole city, such as standard 30km/h (20mph) speed limits, new cycling routes, and greater priority for pedestrians. Others, such as Bogota have made that transformation over many years.

The ambition that some cities, such as Paris and Barcelona and some parts of London, are showing to go beyond making temporary changes to permanently re-vision the streets outside schools and provide new space will transform the experience of children in those areas. Indeed Tirana is making schools and the space around them the building blocks of child-centred community life. Temporary school streets are a building block for these wider changes and creating networks of routes that enable safe and healthy journeys for all.

## 6. Safe and healthy streets are needed everywhere – especially in low- and middle- income countries

Currently most school streets have been implemented in high-income country settings. However, the low-costs and simple concept potentially makes them transferable to low- and middle-income country settings. So far, there have been few trials in these settings – Tirana, Albania is the only example of a middle-income country, and no trials in low-income countries have been found. This appears to be at least partly because this is a relatively new concept.



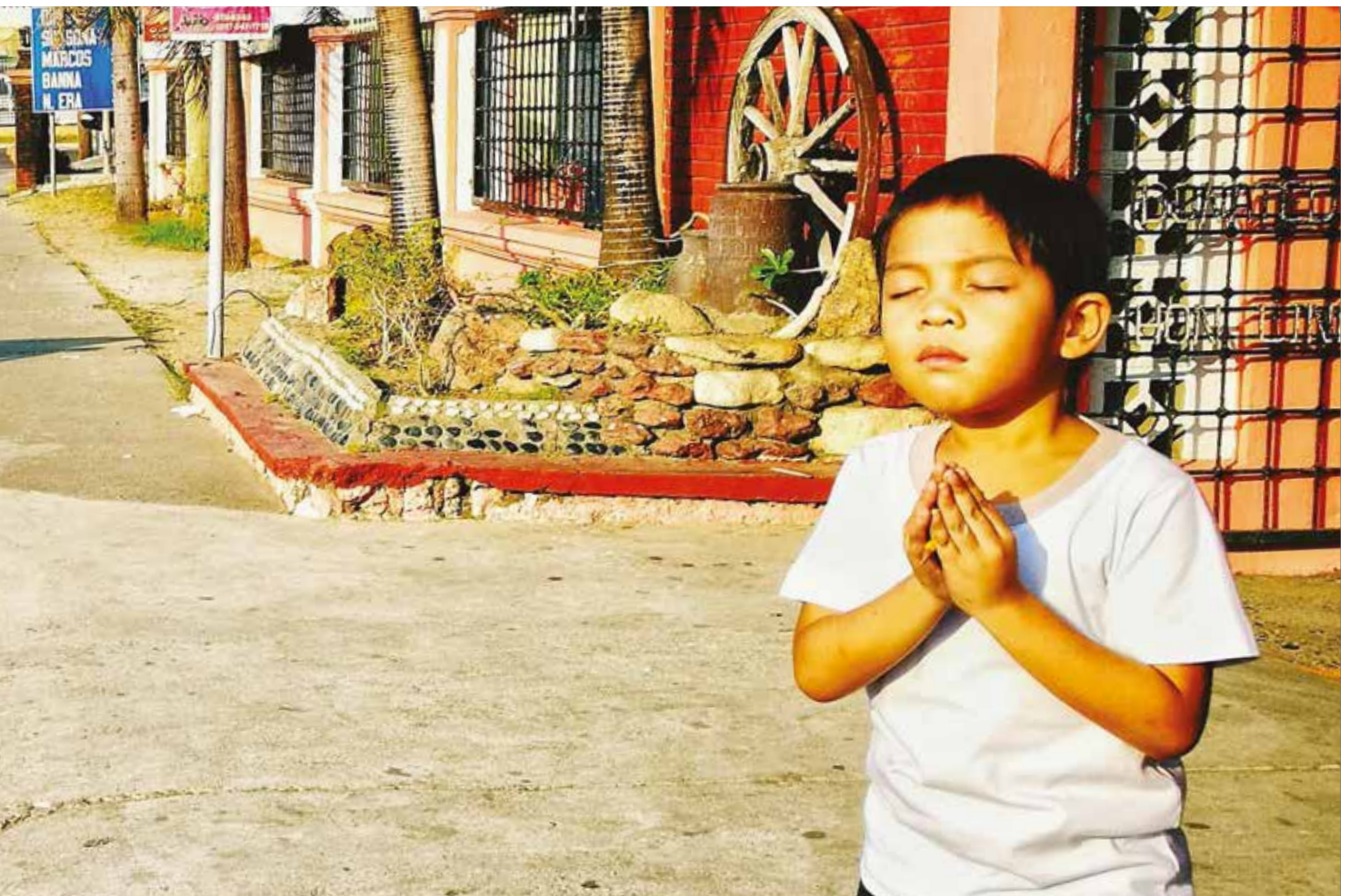
While currently there appear to be few examples of school streets from Africa, Asia or Latin America, there are already inspiring examples of organisations undertaking action to reduce road safety risks around schools in low-income countries by introducing school zones – such as Amend’s School Area Road Safety Assessments and Improvements (SARSAI) programme, which won the inaugural Ross Prize for Cities. Organisations such as Clean Air Asia and UN Environment are also doing important work raising awareness of air pollution around schools. The ‘open streets’ concepts of temporary car-free roads for play and exercise are, however, common in Latin America and are spreading to other areas, including in several African countries.

### 7. **Reveal the invisible harm – Measure air pollution and road safety in low- and middle-income countries**

Issues of air pollution and road safety around schools are at least as important in low- and middle-income countries as they are in many high income cities – although a lack of detailed data means that decision makers, parents and the schools themselves often lack information about levels at individual schools. Improving data on emissions is an important step for making the case for local action – campaigns for action in London, Brussels and Paris were all motivated by studies showing air pollution levels at schools and the impact on children’s health. There have been pilot projects showing how it is possible to enable school children to take part in citizen-science projects around schools, as well projects that are starting to measure air pollution in Africa, including the TRUE emissions project.

For road safety, there are a series of tools that can be used to measure and improve the quality of infrastructure, including Star Ratings for Schools.

For a full set of tools, and support in designing interventions please see the Child Health Initiative toolkit: <https://www.childhealthinitiative.org/toolkit>



# ANNEX



## Summary: Political economy influences on rise of school streets

The following table attempts to summarise some of the main points in the report

Ideas - What has inspired change	Institutions - Who has led change	Incentives - How was change possible?
<ul style="list-style-type: none"> <li>Convergence of (and strength evidence on) air pollution (particularly after 'dieselgate'), active travel, road safety and school transport planning agendas - 'Healthy Streets'</li> </ul>	<ul style="list-style-type: none"> <li>EU projects popularizing idea across multiple countries - and helping foster leaders (such as Hackney)</li> </ul>	<ul style="list-style-type: none"> <li>Affordable and scalable Funding available from a range of sources / agendas - particularly school travel, air quality, active travel and emergency COVID response</li> </ul>
<ul style="list-style-type: none"> <li>Rise of 'tactical urbanism', 'open streets' and increasing legitimacy of experimental approaches / pilots</li> </ul>	<ul style="list-style-type: none"> <li>Established school travel planning (or 'safe routes to school') schemes in many cities and local authorities</li> </ul>	<ul style="list-style-type: none"> <li>Social media and increasing use of webinar technology popularizing idea and encouraging others to pilot</li> </ul>
<ul style="list-style-type: none"> <li>'Build back better' and preventing a car-led recovery from COVID-19</li> </ul>	<ul style="list-style-type: none"> <li>Mayors (London, Paris, Hackney) prioritising air quality agenda and/or children (Tirana)</li> </ul>	<ul style="list-style-type: none"> <li>COVID-19 creating need for space for social distancing outside schools and need for a rapid response</li> </ul>
<ul style="list-style-type: none"> <li>Simple concept, codified in toolkits, and with evidence of successful implementation across many different countries, with adaptations for local concept</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate legal frameworks, highway codes, and road laws (governing processes, signage, use of cameras for enforcement)</li> </ul>	<ul style="list-style-type: none"> <li>International 'competition' between cities to be seen as most 'liveable' - important for economic prospects, and reputation of leaders</li> </ul>
<ul style="list-style-type: none"> <li>Child-friendly cities movement and play streets</li> </ul>	<ul style="list-style-type: none"> <li>Range of other local stakeholders - parents, police, volunteers, students themselves</li> </ul>	<ul style="list-style-type: none"> <li>Organisations offering support (including toolkits and 'Hackney school streets hotline')</li> </ul>
<ul style="list-style-type: none"> <li>Wider environmental and student-led climate movements, such as School Strikes and climate emergency</li> </ul>	<ul style="list-style-type: none"> <li>Campaign groups, individuals and respected international organisations advocating and sharing ideas (e.g. NACTO, 880 Cities, Clean Cities Campaign)</li> </ul>	<ul style="list-style-type: none"> <li>Positive message and universal connection - ultimately about happy and healthy children.</li> </ul>

Table 4

## Timeline of key events

<b>1989</b>	<ul style="list-style-type: none"> <li>First School Streets in Italy (Bolzano)</li> </ul>
<b>2012</b>	<ul style="list-style-type: none"> <li>First School Streets in Belgium (Ghent)</li> <li>School Streets in Milan, Italy</li> </ul>
<b>2013</b>	<p><i>Launch of EU Stars Europe Project</i></p> <ul style="list-style-type: none"> <li>First School Streets Scotland (<a href="#">East Lothian</a>)</li> </ul>
<b>2015</b>	<ul style="list-style-type: none"> <li>School Streets in Edinburgh, Scotland</li> </ul>
<b>2016</b>	<ul style="list-style-type: none"> <li>First School Street in London (Camden)</li> </ul>
<b>2017</b>	<ul style="list-style-type: none"> <li>School Streets in Hackney, London</li> <li>School Streets in Croydon, London</li> </ul>
<b>2018</b>	<ul style="list-style-type: none"> <li>School Streets are formally recognized in Belgian Highway Code</li> <li>School Streets in Solihull, Birmingham</li> <li>School Street in Southampton</li> <li>First regular School Street pilot in Vienna, Austria</li> </ul>
<b>2019</b>	<ul style="list-style-type: none"> <li>School Streets established in Brussels and Anderlecht</li> <li>First pilots in the Hague, Netherlands</li> <li>First school streets in Paris</li> <li>First pilots in Victoria and Ontario, Canada</li> <li>Hackney launches first edition of School Streets Toolkit</li> <li>First school street pilot in Malahide, Fingal County (near Dublin, Ireland)</li> </ul>
<b>2020</b>	<p><i>COVID-19 pandemic leads to lockdowns and school closures around the world</i></p> <ul style="list-style-type: none"> <li>Paris launches 'Rues aux ecoles'</li> <li>England launches Emergency Active Travel Fund, and London issues Streetspace funding – expands numbers of school streets</li> <li>Open Streets pilots in New York, which include roads outside schools</li> <li>School street pilot in Prague (Czech Republic)</li> <li>Wallonie (Flanders) region launches <a href="#">guide to School Streets</a></li> <li>Minnesota (US) launches School Streets <a href="#">guidance</a></li> <li>School Streets <a href="#">defined in Italian highway code</a></li> <li>School Street in Tirana as part of Streets for Kids</li> </ul>
<b>2021</b>	<ul style="list-style-type: none"> <li>Evaluation of <a href="#">air quality impacts of school streets</a> launched</li> <li>Streetspace pilots in Los Angeles, Seattle, Portland (US)</li> <li>'Open streets' trial on school road for month of Fridays in Moreland, Australia</li> </ul>

Table 5

## Case studies

### 1. Abeelstraat, The Hague, The Netherlands (2019-)<sup>259</sup>

The first School Street in the Netherlands was trialed in 2019 in The Hague. It was the idea of Ronald Woudstra, an urban planner who had previously lived in Belgium (as well as other cities around the world), and who had the idea to replicate the concept he had seen there. In a blog post on the Dutch Cycling Embassy website, he explains how the first school street came about, and how it expanded to 15 schools in little over a year.

“I first found out about the School Street concept in 2017, when I was living in Leuven, Belgium. I discovered that many streets in Flemish cities are closed to motorized traffic temporarily, when the children are being brought to school, or picked up from school. I was an instant fan of this concept and I admire the Flemish policymakers for having succeeded in making the areas around schools safe... Only when you take the car out of the street do people truly feel safe when they are walking or cycling to school. In such a situation, more people will make the decision to walk or cycle to school instead of driving.

Fast forward to January 2019 when I started working at the City of The Hague’s Department of Mobility. I started talking about the idea of organizing a School Street in The Hague. And my department and my co-workers were very supportive of the idea, although I also had to convince a few people. Of course that’s to be expected when you come up with an idea that seemed very different than anything we had done in school areas until then.”

He explains the importance of political leadership within the Council – in this case the ‘Alderman for Mobility’, Robert van Asten– who is also the Deputy Mayor of the city.<sup>260</sup> He illustrates the importance of a high-level political champion passionate about the issues (in this case safe streets), and willing to try new things. Ronald emphasizes how this support was crucial, and deserves credit for being a brave local political leader who wasn’t afraid to try a new approach to road safety in a city that was until then relatively car-orientated.

“It also helps that we have an Alderman for Mobility in The Hague (Robert van Asten) who takes road safety very seriously, and who expects us to do everything we can to improve it.”

As with most cities, The Hague initially piloted the concept in just one street, in order to experiment and learn. The choice of school was important – there was a lot of demand from parents to do something, but also it was relatively straight forward; the school was on a relatively small one-way street, and so could be blocked from just one end. The road is blocked by a barrier, and a ‘traffic controller’, dressed in high-visibility clothing controls access.



*“Quite quickly, we found a location for our trial, the Abeelstraat. We already had been receiving reports from parents about how they perceive the situation around the school’s rush hours as unsafe, so it seemed like a perfect place to try out a School Street. We organized a trial that ran for two weeks.”*

By publicizing the pilot, there was a lot of media attention and so other schools heard about it and there was interest from others in replicating the concept. They were able to apply the learning from the first school, particularly around how to prevent congestion on neighbouring roads, and encourage park and stride.

*“We got a lot of interest from other cities and from the media. Our trial in the Abeelstraat has taught us a lot on how to apply the School Street concept in The Hague. Whilst the Abeelstraat itself was very safe during the trial, we also observed that congestion in the immediate surroundings got worse (and it was never very congestion-free to begin with). And so, for our second trial, we began to look for a robust neighbourhood where such problems wouldn’t occur. We had our eyes on the Oeverwallaan in the suburban district of Ypenburg. Here, we were organising a School Street trial for the two schools that share a building on this street. There is also a parking lot close to the schools (servicing a nearby hockey club), so that we were in a better position to close the street to motorized traffic. Those parents who would normally drive to one of the schools had an alternative, so that they don’t need to drive through the Oeverwallaan. We were also planning to let the trial run for a longer time (two months) than the first one, in order to get parents and pupils to really change travel habits.”*

The school street scheme expanded rapidly in response to the pandemic, prioritizing streets where additional space for social distancing would be beneficial – which led to a further 15 schools being added, where there was a desire from the schools for

*“With the announcement that schools would open up again on 11 May, our department started proactively investigating all 189 elementary schools in The Hague and their surroundings. We considered how easy it would be for people to maintain 1.5m of distance when they would go back to school. And we divided the schools into three categories:*

- 1. Schools where no problems are foreseen;*
- 2. Schools where some problems are foreseen, which can be solved relatively easily by the school or by us;*
- 3. Schools where keeping distance will be problematic due to a lack of space.*

*For all schools in category 3, we made a plan to make sure people can keep a safe distance from each other. In many cases, this was a School Street. In the space-constrained streets of The Hague, when you take the car out of the equation, there suddenly is plenty of space for pedestrians and cyclist to get to school and keep a safe distance.*

*We reached out to these schools and asked them how they felt about closing their streets to traffic during the school rush hour. Most schools appreciated the idea. And so, we got to work and organized a further 15 School Street trials in the city. Initially, we expected that we needed to implement 30 new School Streets, but in some cases the schools told us they weren’t necessary.”*

## **2. Toronto, Canada (2019)<sup>261</sup>**

A four-day school street was trialed in Mountview, Toronto to test the concept of school streets in the city. It was part of a series of demonstration projects led by 880 Cities that aimed to highlight the importance of street design in achieving safer streets – particularly as streets account for 75% of public space in Toronto. The pop-up was simple and inexpensive to implement, and 100% of children surveyed preferred the car-free road.

Mountview school was chosen because it was in a residential area, with a large number who travel to school by active travel. However, there were major issues with safely crossing the road, and also with congestion and unsafe driver behaviour in the road around the school. The school also had strong environmental leadership from the head teacher and the active eco-team of pupils, with a culture of promoting active travel. A local Councillor, Gord Parks was also critical in making the project possible, creating the connection with the school and opening doors with municipal staff.

The process of organizing the school street took 5 months, from initial meetings in May 2019 to the 4-day pilot in October. The length of the pilot was determined by the need to apply through the street events unit, which

had a maximum length of 4 days. 880 Cities and their partner organization EcoKids held meetings with staff and children before the trial and collected data to assist the evaluation. The school community were notified using printed flyers and e-mails, and signs indicating the closure were put up on the street.

The schools' student eco-team created posters and conducted classroom visits to remind other children about the project. Community volunteers in hi-visibility jackets helped implement the road closures – one volunteer stood at each closure location and answer questions, while other volunteers helped organize the pop-up engagement activities and capture feedback. Barriers were placed at the side of the road when not in use and stored overnight in the school. On the launch day, there were a series of activities to generate excitement for the concept, and a press conference for the media, which included the local Councillor. Subsequent days were more low-key, with a few activities put out, but the culture had already changed that children were excited to walk and play in the school street zone.

The temporary school street had to move the location of loading and unloading school buses to the next street. They then had to walk through the school street zone, which added some additional exercise to their day. Similarly, for parents who had to drive, another location 5 minutes walk away was suggested – known as “driving to five”. The area of street had no houses with driveways on it, which meant that it relatively straightforward to work with local residents.

The organisers had an ‘engagement hub’ near the school entrance with sticky dots and notes and ways to give feedback. Boards were set up at different heights for parents and children to ensure both felt able to participate. They also had an online survey and e-mail address for more detailed comments, which received 30 replies.

The pilot was a success, with a 20% decrease in the proportion of car travel for the duration of the event. 97% of pupils agreed that the street felt safe, compared with just 23% before the pilot.

While the organisers managed to negotiate the bureaucratic system for organizing permits, these were not really appropriate for this kind of activity, so they recommended that a new ‘school street’ permit is created, with a simplified language and process.

### 3. Tirana, Albania (2020-)

Tirana is one of the only middle-income countries to have developed school streets – although in its case they have chosen to opt for a permanent approach (rather than timed) that aims to create more space for people by typically removing one lane of traffic, and making the street one-way. This is part of a wider vision of making schools the epicenter of local social and health infrastructure throughout the city.

Tirana’s first school street was supported by the Streets for Kids project, and built on 5 years of child-friendly planning policies in the city. In 2019, Tirana was selected as one of four cities to receive specialist support from the Global Designing Cities Initiative (GDICI) as part of its Streets for Kids programme (supported by the Bernard van Leer Foundation, FIA Foundation, Fondation Botnar, and Bloomberg Philanthropies)<sup>262</sup>. In collaboration with the school and neighbourhood community, and the city of Tirana, the NGO Qendra Marrëdhënie (Relationship Centre) created a playground and safe mobility zone with an emphasis on walkability for young children and their caregivers<sup>263</sup>.

Since coming to power in 2015, Mayor Erion Veliaj has worked to improve liveability in Tirana as a core goal of rapid urban development. He has become well known internationally for focusing on the health and wellbeing of children, in a city that had become dominated by vehicles following the end of communism in 1991. Until recently, the city had one of the youngest populations in Europe, but there had been little investment in schools or parks. Local government reforms in 2015 meant that the size of Tirana’s municipality increased from 40 square km to nearly 1,200, which encapsulated a third of the country’s population and half its economy. It also gained responsibility for areas such as early-years education and school construction. As one review puts it, “Improvements that helped children were relatively low-cost, conspicuous, and popular”<sup>264</sup>. They could also be implemented quickly, which was important for showing progress.

*“This city is a chicken,” Veliaj said. “People need to see an egg every day: a concrete, tangible, physical space that has been transformed. It can be a school, a kindergarten, a nursery, a bike lane, a new park, a library, but . . . unless people can see concrete things [change], then it’s just politicians’ talk.”*

This powerful communication style is characteristic of the approach taken by the administration. The Deputy Mayor also compared the focus on children as similar to acupuncture, creating wider benefits for other groups:

*"If you build something that's right for kids, it turns out to have externalities that help every other part of society: the environment, . . . the socializing of a community, the development of trust. They turn into an acupuncture exercise. In a way, if you touch one nerve, then that generates that level of energy throughout the system."*

A pivotal moment was in 2016, when protestors, fearful of the proposed changes to the city's Central Park attempted to disrupt the showcase project. Despite opposition from the country's President, the Mayor pressed on. The new playground, the biggest in the Balkans, opened in June 2016 and was immediately popular with parents. Encouraged by this, the Mayor committed to building or renovating a playground every month across the city. By 2022, the city had built over 70 of them, with the support of volunteers and private donors.

In order to make the city less dominated by vehicles, the Mayor took bold steps. He proposed pedestrianizing the main square (thought to be the largest traffic island in southeastern Europe) and started car-free Sundays to expose the idea, inviting children to play in the car-free space. Although it was initially opposed by drivers, the images of children playing made the proposal widely popular across the city. The Mayor developed a masterplan for the city in 2016, which proposed new greenways, local infrastructure, and a green belt to encourage greater density.

The Bernard van Leer Foundation also supported the city to develop a child-centred approach, running workshops and developing a concept of designing neighbourhoods around schools, making them the hub for services and child-friendly infrastructure. These were turned into practical guidelines by Qendra Marrëdhënie (QM) in 2019 and were adopted by the government.

The Mayor clearly understood the power of children, calling them "revolutionaries in the household," capable of influencing their parents far more strongly than a politician ever could<sup>265</sup>

Simon Battisti, Director of QM, explained that as schools are evenly distributed throughout the city, the strategic approach of targeting them offers the same access to child and caregiver friendly services and amenities to every neighbourhood in the city. The first school street in Tirana, the Gjon Buzuku Play Street was built in 2020. It is a semi-permanent change using bollards and paint, which converted 1,680 m<sup>2</sup> of street space into protected sidewalks, planted 25 semi-mature and mature trees, and installed new lighting. The street painting was designed in collaboration with children from the neighbourhood.<sup>266</sup> The timing of the changes meant that the changes were made in the context of COVID-19. Simon said that the impact of the changes wasn't really felt until they held street parties, which brought people together and included local dignitaries. The participation of the Deputy Mayor appeared to strengthen the support for the project.

Subsequently, QM have sought to apply the learning from the first street and roll them out across the city. In October 2021, the city announced that schoolyards would be open after hours to allow access to space to play<sup>267</sup>. 10 further school streets were approved in February 2022<sup>268</sup>, with funding from GIZ Albania, as part of a wider urban mobility project<sup>269</sup>. These are not typically a complete road closure and are permanent, with no timed element - mainly closing one lane or direction of traffic and adding additional crossing points. This saves on the logistical challenge of managing volunteers. However, it does require far more bollards - in this case approximately 38 300kg concrete bollards at intervals down the road (500 in total across all 10 schools)- an upgrade from the temporary traffic cones that were originally used in the first street, but which were easily removed. The aim with these streets is to make the changes to the road layout first and then subsequently to add other elements, such as artwork on the street to invite a sense of ownership.

Clearly with traffic still using one half of the street, there remain road safety risks. However, speed limits are reduced to 20km/h and clear crossing points are indicated. The remaining road lane is also significantly narrowed (to 2.8m or 3m). Traffic speed is monitored through the project, as one of five indicators, along with traffic mode and the popularity of the scheme.

There is no formal inclusion of school streets in the Albanian highway code, but the municipal traffic engineers simply combine different elements that are allowed to approve the designs. The process was able to be implemented quickly as the designs were worked on in collaboration with the local government officials, who the project has established a good working relationship with. There is no consultation beforehand with communities, apart from with school leaders - rather the low-cost implementation approach should allow for any changes to be made subsequently - for example potentially changing the direction of flow of the traffic. The designs are signed off by the

relevant officials and a design posted in the neighbourhood before it is implemented<sup>270</sup>. The project is part of a wider set of works aiming to improve mobility in the city, which includes work on new walking guidelines, and reforms to the bus system.



#### 4. Rest of England

In May 2020, the UK government issued additional statutory guidance to local authorities about how to reallocate road space to support active travel and social distancing.<sup>271</sup> As transport is a devolved power, the UK government only has influence over transport policy in England, with Wales, Scotland and Northern Ireland setting its own budgets and priorities. This guidance includes reference to school streets, which are described as being “effective in encouraging more walking and cycling, particularly where good facilities exist on routes to the school and where the parents, children and school are involved as part of the scheme development”. This built on the government’s 2020 strategy *Gear Change: A bold vision for cycling and walking*<sup>272</sup> which had the vision of making England a ‘great walking and cycling nation’. While previous administrations had developed walking and cycling strategies,<sup>273</sup> the fact that cycling was a particular priority of Prime Minister Boris Johnson, which he had previously championed as Mayor of London, was important for giving this political priority and funding. By early 2021, the majority of London boroughs had implemented school streets and around a quarter of authorities in the rest of England had introduced them.<sup>274</sup> Given that there were previously only around a handful of examples outside London before this point (such as Southampton and Solihull), the fact that over a hundred authorities introduced school streets is also a considerable increase.

## Complete list: School streets around the world

This aims to be as comprehensive a list of school streets projects as possible. In countries where there are a lot of examples it hasn't been possible to list all separately, but this aims to give an impression of the main cities and examples.

### Europe

Country	Authority	Details
Italy	Bolzano (1989-)	9 school streets, in place for 15 minutes at start and end of day, managed by crossing guards
	Milan (2012-)	17 school streets by 2019, enforced by police
	Rome (2021-)	17 schools, but only in place one day a week
	Parma (2017-)	35 of 70 schools have a school street
	Other cities	Reggio Emilia, Olbia (Sardinia), Bologna
Belgium	Ghent (2012-)	Streets closed for 30 minutes at start and end of day. Schools provide volunteers who close the roads. By 2019, there were 12 schools. 5 year <a href="#">evaluation</a> . In 2020, the city added extra measures for COVID, including <a href="#">25 temporary school streets</a> .
	Antwerp (2020-)	<a href="#">Ten schools</a> in 2020 as pilots which are now being made permanent, and one more added in 2021. <a href="#">Five continuing in 2022</a> .
	Brussels (2019-)	13 school streets introduced in early 2019, with the number <a href="#">expanded</a> to 19 in September, and potentially 24. <a href="#">46 schools listed</a> by December 2019. The test phase is 3 months.
	Kortrijk (2016-)	Three current schools streets, and one 'voluntary' school street
	Brugges (2017-)	Currently six school streets
	Destelbergen (2019-)	Three schools
	Herentals	Five schools. A ban applies to all motorized traffic. Note: Because school ends early on Wednesday, timings are different on this day
	Hasselt	Five schools
	Others	By end of 2020, <a href="#">at least 159 schools in Flanders</a> (note will include many of those above), and in <a href="#">more than 50 municipalities</a> . Flemish Government supported ' <a href="#">Ready for the school street</a> ' <a href="#">Research</a> into five school streets found respiratory tract improvements. 95% felt safer, and 75% of parents supportive afterwards (even though majority were previously against it).
	Austria	Vienna (2018-)
Graz (2017)		Took part in Metamorphosis project. Appears to be pilot and <a href="#">one-off events</a>
Netherlands	The Hague (2019-)	At least <a href="#">15 school streets</a> . <a href="#">Three schools made permanent in January 2021</a> . For the pilots schools had traffic controllers, but due to cost, permanent ones will be run by volunteers. Lack of national laws
	Utrecht (2020-)	Trials in <a href="#">two schools</a> , with one continuing
	Zwolle (2021)	Trials in two schools for three weeks. <a href="#">Children involved</a> in speaking to people at entrance
Czech Republic	Prague (2020)	Three week trial at two schools
	Říčany (2020)	All motor vehicles except buses are prohibited from entering one-way street from 7.30am to 9am. Compliance by police officers. A new parking lot built 100 yards from school gate.



<b>France</b>	Paris (2019-)	150 school streets in Paris – 59 added in both 2020 and 2021. Are total or partial pedestrianisation
	Lyon (2020-)	Lyon has a concept of ‘meeting areas’ – where pedestrians have priority, but vehicles are allowed at 20km/h. Others are pedestrianized. As the concept is slightly different it is hard to compare, but one report states <b>23 schools</b> . In 2020, <b>12 streets</b> were made fully pedestrian
	Lille (2003- and 2020-)	A simple school streets was established in 2003 through the use of a chain. In November 2020, three new school streets were added with a formal barrier, and <b>three were added in January 2021</b> . This has now increased to <b>twelve streets</b>
	Bordeaux (2021-)	In Bordeaux they are known as ‘rue aux enfants’. 16 schools were added in 2021, with three permanent, and the rest temporary for the start and end of the day. 15-20 new schools are planned to be added each year.
	Grenoble (2021-)	15 schools <b>pedestrianized</b> from September. Eventually 61 schools will be affected. In October 2021 a court <b>ordered the suspension</b> of the ‘place aux enfants’ project. However, <b>subsequently new rules were put in place</b> allowing certain groups living on or around the street access.
	Strasbourg (2021-)	1 school street piloted from March – July 2021. Mayor committed to expanding by 10 school streets a year until 2026
	Others	Other <b>reports</b> suggest 8 in Marseille and 1 in Cugnaux, and 1 in Toulouse. There is also a wider ‘rues aux enfants’ movement that has been undertaking action in a range of cities, although it more related to the ‘play streets’ concept and is <b>clear to distinguish itself from it</b>
<b>Spain</b>	Barcelona (2020-)	Barcelona has a ‘Protegim les escoles’ (‘Pacified schools’) programme that aims to spread to all schools. It started in 2020 with 26 schools, and expanded to 75 more schools in 2021, with plans to expand by 54 in 2022. They include pedestrianization, and creation of new space to play – but tend to be permanent changes, so don’t necessarily fit the ‘school streets’ model.
<b>Denmark</b>	Vanlose (2016)	Not a traditional ‘school street’ in the sense of a temporary closure, but a more revolutionary concept which involved the permanent <b>closure of a road</b> between two schools, and conversion into an amazing extended playground.
	Odense (2012?)	In <b>Vestre Skoll, Odense</b> a new <b>shared space</b> for play was created on a dead-end street leading to the school, repurposing street parking, painting colourful squares on the street and installing new play barriers. There are no physical barriers blocking vehicle access, and it is more a ‘shared space’ than a car-free school street.
<b>Albania</b>	Tirana (2020)	<b>Playground and safe mobility space</b> created outside school, funded by Streets for Kids in 2020
<b>Ireland</b>	Fingal (near Dublin) 2019-	Two schools in Malahide, including park and stride zones and walking buses. Enforced by police and traffic wardens. <b>Evaluation</b> found 20% reduction in air pollution. Included in <b>National Transport Authority design guide</b>
	Galway (2020-)	First city centre project in Ireland. <b>Report</b> after year found car use fell by 14%. Regulations adapt ‘pedestrianized zone’ signage to ‘school zone’

<b>Scotland</b>	<a href="#">East Lothian</a> (2012-)	Two schools – roads closed morning and evening for 1 hour
	<a href="#">Edinburgh</a> (2015-)	12 schools involved, enforced by Police Scotland
	<a href="#">Glasgow</a> (2019-)	35 <a href="#">currently listed</a> 6 pilots in 2019. 19 added as part of Spaces for People scheme. 10 added in 2021 in phase 3. Also known as 'School Car Free Zone'.
	Others	Including 1 school in <a href="#">Clackmannanshire</a> (2017-), two schools in <a href="#">Moray</a> (2021-)
<b>Wales</b>	<a href="#">Cardiff</a> (2020-)	24 <a href="#">temporary schemes</a> were put in place in June 2020. 14 permanent in Cardiff, enforced by cameras
	Others (2021-)	Including one school in <a href="#">Rhyl</a> , and included in Welsh government <a href="#">guidance for funding</a> for 22/23
<b>England</b>	London (2016-)	<a href="#">Over 500</a> , including <a href="#">every borough</a> except Bexley, and the highest proportions in <a href="#">Hackney</a> , <a href="#">Islington</a> and <a href="#">Merton</a> . Plans for 80 more school streets in 2022/23, subject to funding.
	Others	54 local <a href="#">authorities outside London</a> (36 by 2020, 18 with plans to – in total 107 at March 2021) including: 18 in <a href="#">Birmingham</a> 14 in <a href="#">Halifax / Calderdale</a> 12 in <a href="#">Leeds</a> 11 in <a href="#">Southampton</a> 11 in <a href="#">Nottingham</a> 11 in <a href="#">Solihull</a> 9 in <a href="#">Peterborough</a> 9 in <a href="#">Oxfordshire</a> , of which five have continued 7 trialled in <a href="#">Sheffield</a> 7 in <a href="#">Bristol</a> 6 trialled in <a href="#">Devon</a> , three now permanent 6 in <a href="#">Brighton</a> , currently being reviewed 4 in <a href="#">Bournemouth</a> 3 trialled in the <a href="#">Wirral</a> 3 schools in <a href="#">Newcastle</a> 3 in <a href="#">Hampshire</a> 2 in <a href="#">Slough</a> 2 in <a href="#">Milton Keynes</a> (one other paused) 2 in <a href="#">Kent</a> 2 in development in <a href="#">Gloucestershire</a> 1 in <a href="#">Swindon</a> 1 in <a href="#">Portsmouth</a>

Table 6

North America

Country	Authority	Details	
US	Fair Haven, New Jersey (2000-)	A longstanding (since around 2000) permanent time-restricted closure of a local connector street between two schools during arrival and dismissal so that students and parents can walk and bike safely to school. Not called 'school street'. Police shut street. Put in place as no public buses	
	Minnesota (2020)	Minnesota issues school streets <a href="#">guidance</a> - although no schools have yet to pilot	
	New York (2020-)	New York's <a href="#">Open Streets</a> programme includes a 'Full Closure: Schools' option, which is currently in place at almost 100 schools. The policy is also motivated by creating additional space for outdoor learning. Campaigners are calling for these to be made permanent, <a href="#">making reference to School Streets</a> . At least one school ( <a href="#">PS11 in Chelsea</a> ) had temporary street closure for <a href="#">more than a decade</a>	
	Seattle (2021)	8 school streets in place across the city, since April 2021 ( <a href="#">originally nine</a> ). In effect 7am to 5pm on school days	
	Los Angeles (2021)	Trial in <a href="#">one school</a> October-November 2021 led by Los Angeles Walks. Included daily <a href="#">programming and activities</a> In <a href="#">a second school</a> , a school street was included as part of a series of temporary changes	
	Portland (2021)	Two month trial in six schools from October to November 2021 - although feedback from schools that they want this to be extended	
	Canada	Victoria (2019-)	On day <a href="#">pilot</a> in 2019 - 45 minute closures at start and end of school. <a href="#">Two schools piloted</a> in 2021
		Vancouver (2021)	<a href="#">Piloted</a> in three schools April/May 2021. Currently in place at one school 2021/2 - plans to expand
Toronto (2019)		<a href="#">Pilot</a> for four days in autumn 2019, run by 880 Cities	
Ontario (2021)		Pilot School Streets in three communities - Hamilton, Markham and <a href="#">Mississauga</a>	
Winnipeg (2020)		60 day <a href="#">pilot</a> at one school - road closed 8.30am - 4pm. Run by Green Action Centre. Barricades placed on road. Monitoring with additional barricades from 8.30am to 9am and 3.15 to 3.45	
Kingston (2021)		Pilot project at one school, <a href="#">for one year</a> . <a href="#">Four volunteers needed</a> - two at each entrance point, with one chaperoning any vehicles, and one maintaining oversight of access point.	
Montreal (2021)		Initial pilot project at two school. At <a href="#">one school</a> , temporary closures, one day a week in the morning and afternoon on three days. On <a href="#">other school</a> every Friday. Pilots led by Centre d'écologie urbaine de Montréal (CEUM), who have produced a <a href="#">guide</a>	

Table 7

## Others

Country	Authority	Details
<b>Australia</b>	Moreland, Victoria (2021)	<a href="#">Open Streets trial</a> in Brunswick East, every Friday in March 2021.
<b>New Zealand</b>	<a href="#">Auckland</a> (2020)	'Safe school streets' - not strictly the same concept as vehicle restrictions don't close the road, but significant changes, timed restrictions on parking and new 'pick-up/drop-off zones' away from the gate. <a href="#">Now involves tactical urbanism trials in 13 schools</a>

Table 8

## Toolkits and guidance:

Guidance	Information
<a href="#">Schoolstreets.org</a>	Introduction to the concept, and information (UK-focused)
<a href="#">Hackney School Streets for Professionals</a>	In-depth (50+ pages) practical information about how to start a school street programme, based on Hackney's experiences in London
<a href="#">880 Cities School Streets Guidebook</a>	Canadian / North American resource based on experiences from around the world
<a href="#">Wallonie guide</a>	Belgian guide ('Concevoir une rue scolaire - Méthodologie et bonnes pratiques) sharing practical experiences and information - <i>in French</i>
<a href="#">Ready for the school street</a>	Web-based Belgian guide, including a step-by-step plan <i>in Dutch (but auto-translate in internet browsers)</i>
<a href="#">Le strade scolastiche</a>	Italian guide - with experiences from Italy and around the world, and practical advice - <i>in Italian</i>
<a href="#">Play streets and school streets</a>	Guide by the Centre of urban ecology in Montreal (Canada) exploring importance of play streets and school streets, with examples - <i>in French</i>
<a href="#">Re-envisioning School streets: Creating More Space for Children and Families</a>	Pedestrian and Bicycle Information Center Info Brief- sharing information to support safe routes to school in the US
<a href="#">School Streets + Park &amp; Walk</a>	Guide to developing and implementing School Streets and Park & Walk created by Minnesota Safe Routes to School (US)
<a href="#">Safe to School</a>	A Green Schools Ireland resource about ideas for safe access to schools includes information about starting school streets.

Table 9

In addition, there are a number of campaign resources, aimed at parents and local stakeholders. The following are from the UK:

Details	Information
<a href="#">Mums for Lungs</a>	Campaigning guide
<a href="#">Friends of the Earth</a>	Briefing
<a href="#">Living Streets</a>	Resources and <a href="#">Toolkit</a>

Table 10

## Steps to implementing school streets

Most guidance divides the process into around three phases (or six separate steps):

### Phase 1: Engage and Plan

Engage includes liaising with the different stakeholders within the local authority and around the school (from Hackney guide)<sup>275</sup>

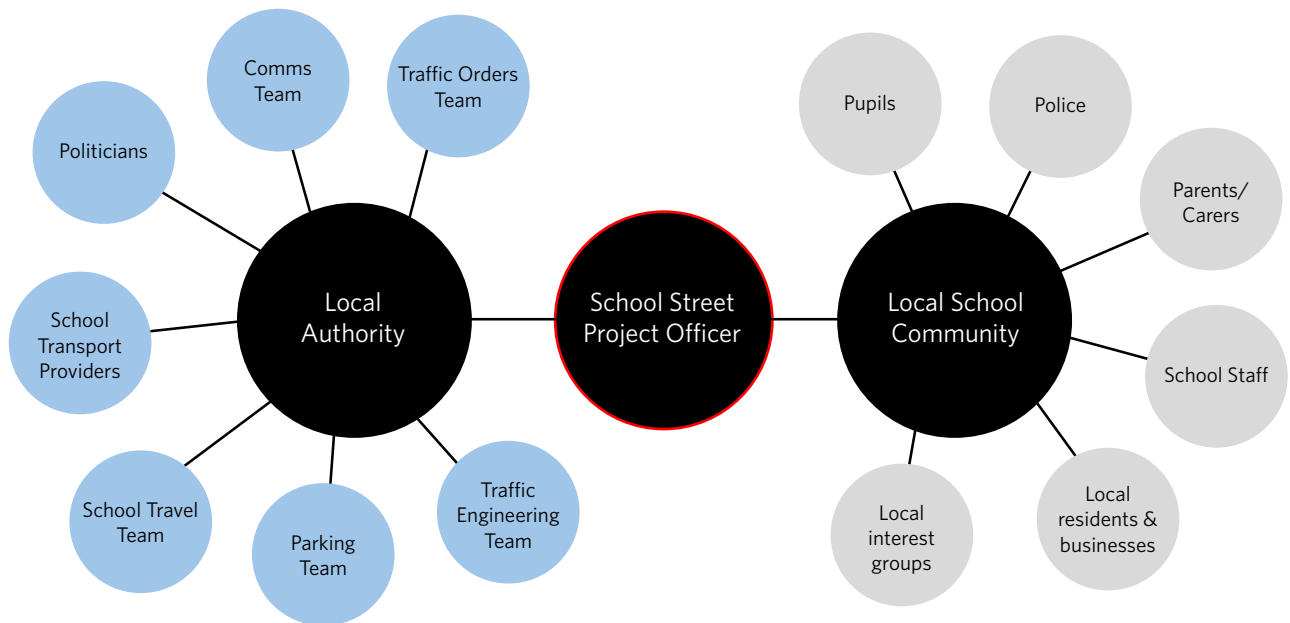


Figure 4

Planning makes agreeing the approach, getting the various permissions, and getting all the equipment and other resources necessary, including information to share.

### Phase 2: Launch (Install and enforce)

Often school streets are launched as a short-term pilot, but in other cases where authorities are used to the system they may be installed as a longer-term pilot or even a permanent change.

### Phase 3: Evaluate and Sustain

In order to go beyond a pilot phase there needs to be good information about the impact that the scheme has had. It is also important to continue to engage with different stakeholders to address any issues and ensure that a routine process can be achieved that will ensure that long-term success.

# ENDNOTES

- 1 School Streets - 8 80 Cities
- 2 Guidance for Safe and Healthy Journeys to School - Child Health and Mobility ([childhealthinitiative.org](http://childhealthinitiative.org))
- 3 18201\_RoadSafety English Summary For Web.pdf ([who.int](http://who.int))
- 4 Global status report on road safety 2018 ([who.int](http://who.int))
- 5 Deprivation and Road Safety in London ([tfl.gov.uk](http://tfl.gov.uk))
- 6 Air pollution ([who.int](http://who.int))
- 7 Children and air pollution ([who.int](http://who.int))
- 8 <https://www.unicef.org/rosa/stories/toxic-air-harming-our-children-every-breath-they-take>
- 9 Physical activity ([who.int](http://who.int))
- 10 Global status report on road safety 2018 ([who.int](http://who.int))
- 11 GIS-based spatial analysis of child pedestrian accidents near primary schools in Montréal, Canada ([monash.edu](http://monash.edu))
- 12 Análisis-espacial-de-puntos-críticos-de-atropellos-de-niños-en-zonas-de-Establecimientos-Educativos-Santiago-Chile.pdf ([conaset.cl](http://conaset.cl))
- 13 The safety of schoolchildren on London's roads - final report ([tfl.gov.uk](http://tfl.gov.uk))
- 14 <https://globaldesigningcities.org/publication/designing-streets-for-kids/>
- 15 Child Health Initiative | A new partnership for the Global Goals, protecting the rights of children to safe and healthy mobility free from road traffic danger and air pollution.
- 16 [pe1.pdf](http://pe1.pdf) ([gsdrc.org](http://gsdrc.org))
- 17 <https://www.childhealthinitiative.org/connect/publications/every-childs-right-to-breathe>
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- 19 Schulstrasse-Nachmittag\_GTVS\_Rosa\_Jochmann\_1110\_Wien\_Endbericht.-2019pdf.pdf ([wienzufuss.at](http://wienzufuss.at))
- 20 <https://www.paris.fr/pages/57-nouvelles-rues-aux-ecoles-dans-paris-8197>
- 21 Kit Expérimentation Rues scolaires - Google Slides
- 22 Car free school streets | Car free school streets | Birmingham City Council
- 23 TMAC Schools ANPR Report Final 4.7.18.pdf ([croydon.gov.uk](http://croydon.gov.uk))
- 24 School Streets and Park & Walk ([state.mn.us](http://state.mn.us)); School Streets Guidebook - 8 80 Cities; School Streets | National Association of City Transportation Officials ([nacto.org](http://nacto.org))
- 25 Work With Us - Open Streets Project
- 26 NYC DOT - Open Streets
- 27 [https://www.880cities.org/portfolio\\_page/school-streets/](https://www.880cities.org/portfolio_page/school-streets/)
- 28 <https://fabricofparis.com/2021/03/30/three-city-policies-making-life-in-paris-better-for-children.html>
- 29 [https://www.richmond.gov.uk/media/20348/school\\_street\\_checklist.pdf](https://www.richmond.gov.uk/media/20348/school_street_checklist.pdf)
- 30 [https://www.royalgreenwich.gov.uk/info/200259/transport\\_and\\_travel/2047/school\\_streets](https://www.royalgreenwich.gov.uk/info/200259/transport_and_travel/2047/school_streets)
- 31 <https://www.kingston.gov.uk/sustainable-transport-safer-greener-healthier-travel/sustainable-travel-planning/2>
- 32 [cematheque\\_0051.pdf](http://cematheque_0051.pdf) ([wallonie.be](http://wallonie.be))
- 33 The school street - Sécurité ([wallonie.be](http://wallonie.be))
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- 40 Gjon Buzuku Play Street — Home ([qendra-m.org](http://qendra-m.org))
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- 42 <https://drive.google.com/file/d/1UVVmMxxgFBIKSGE-h9sZn3s4sP7wKWmC/view>
- 43 Open Streets Forever — Transportation Alternatives ([transalt.org](http://transalt.org))
- 44 Bolzano: School streets - YouTube
- 45 Home | METAMORPHOSIS ([metamorphosis-project.eu](http://metamorphosis-project.eu))
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- 49 <https://www.hsph.harvard.edu/c-change/subtopics/coronavirus-and-pollution/>
- 50 Safe-Routes-to-School-Design-Guide-Version1-July-2021.pdf ([nationaltransport.ie](http://nationaltransport.ie))
- 51 Designing Streets for Kids Guide | Global Designing Cities Initiative
- 52 <https://nacto.org/publication/streets-for-pandemic-response-recovery/introduction/principles-to-guide-covid-19-response-recovery/>;
- 53 Fair Haven, NJ - Third Street Community Connection - YouTube
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72 nua-english.pdf (unhabitat.org)

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74 Results: input indicators – Healthy Streets Scorecard

75 School Streets — Mums for Lungs

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