School Streets and Traffic Displacement

Practitioner's Guide

THE ROAD SAFETY TRUST
Making Roads Safer

Birmingham City Council

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Abbreviations

ANPR	Automatic Number Plate Recognition
ATC	Automatic traffic counter
BCC	Birmingham City Council
LTN	Low Traffic Neighbourhood
RST	Road Safety Trust
SEN	Special Educational Needs (and Disabilities)
SS	School Street
TSVs	Traffic Speed and Volume

For descriptions of the terminology used in this report refer to Appendix 1

School Streets and Traffic Displacement

Summary of research findings and best practice

Introduction

Road safety continues to be a serious issue in the UK, particularly on the walk to school. In 2019, 1,275 children on foot were killed or seriously injured on UK roads (Department for Transport, 2020). In 2015, 39% of incidents of children on foot being killed or seriously injured on UK roads occurred between 07:30am and 08:59am or between 15:00pm and 16:59pm on a school day (Department for Transport, 2016)[1]. One way of addressing school road safety, is through School Streets.

There is limited understanding of the wider implications for road safety of School Streets – particularly on the surrounding road network, with common concerns including traffic simply moving onto adjacent streets, making those streets more dangerous.

This Practitioner's Guide sets out the findings of a Sustrans research project to measure the traffic displacement impact, and associated road safety impact, of School Streets. The full detail of the research can be found in our separate technical report[2]. In Birmingham where we conducted monitoring for the research, their programme of School Streets schemes is known as 'Car Free School Streets'.

We report our findings against the following key research question:

"Do School Streets cause traffic displacement that may affect road safety on surrounding roads?"

We have compiled key learnings from this project alongside examples of best practice taken from other School Street schemes from across the UK. All school sites vary and have different needs in order to support a safer environment for residents, families and school staff. We aim to provide information which can support local authorities to develop more School Streets in their various formats.

What are School Streets?

A School Street is a timed road closure where motorised traffic is restricted at school drop-off and pick-up times. The aim is to create a safer, healthier and more pleasant environment with cleaner air and less traffic congestion.
The restriction applies to all motor vehicles with exemptions for emergency vehicles, blue badge holders, service providers and residents needing access to the street. Schools implement the school streets via the Local Authority, using a Traffic Management Order.

What is road safety?

Road safety can be seen as freedom from the liability of exposure to harm or injury on the highway. However, it is also important to consider road safety as more than just the avoidance of harm. It must also consider the *perception* of risk of harm, at an individual and community level.

[1] The statistic required for the calculation of this percentage value is not available for any years after 2015
[2] The full Technical Report can be found at https://tinyurl.com/rsttechreport

School Streets and Traffic Displacement Project

The School Streets and Traffic Displacement Project

To answer the research question '**Do School Streets cause traffic displacement that may affect road safety on surrounding roads?'** this research project sought to understand the impacts of school streets interventions on:

- Traffic displacement: the displacement of vehicular traffic from the school street on to adjacent or nearby roads (which did not have an intervention)
- Road safety (as defined below)

As part of the research, we monitored two School Streets taking place as part of Birmingham's Car Free School Streets Programme (delivered by Birmingham City Council). These school streets were implemented independently of the research project at Hillstone Primary and Somerville Primary School in Birmingham. Both schools had School Streets in place at the start and end of the school day where by access to the school road was restricted without a permit.

Road Safety Measures

Road safety at both schools was measured through the following indicators with findings listed on the following slide.

1. Higher volumes of vehicular traffic
2. Higher traffic speeds
3. Illegal parking and driving behaviour
4. Conflict between road users
5. Resident's perceptions of road safety

Monitoring Tools

The following monitoring tools were used to capture data as part of the research. Further description of the research activities and methodology is provided later, with a full description of the given in the Technical Report.

- Automatic Traffic Counts
- Video Monitoring
- Postal Surveys (Community Perception Surveys)

The Road Safety Trust

The Road Safety Trust is the largest independent road safety grant-giver in the UK and funds vital research and practical interventions committed to reducing the number of people killed or injured on UK roads. The Road Safety Trust (RST) awarded a grant under their 'Innovative traffic calming and provision for vulnerable road users' round to fund this research.

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Research findings - summary

(Hillstone Primary)
Overall traffic

8%

during School Street time window.

5%

outside School Street time window.

At both schools, overall traffic volumes, across the school road and surrounding roads, **fell during the School Street time windows**…

…whereas **outside of the School Street time windows**, overall traffic levels across the same roads **rose** over the same timeframe, suggesting that some traffic had been removed from the road following the implementation of the School Street

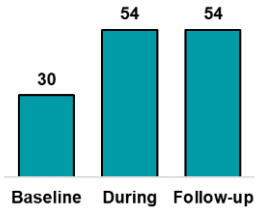
This was consistent with the literature review, which found that in almost all cases **there is a reduction in the total number of motor vehicles** on School Streets and neighbouring streets

7%

From 15.3 mph to 16.3 mph

Average speeds on Hillstone Road (School Street) **rose slightly**, after the School Street was implemented. Though the speeds before and after were relatively low

(Somerville Primary)
Number of drivers pavement parking near School Street



At both schools, we observed an increase in the number of parked cars near the entrance to the School Street, and a **higher number of parking cars interacting with other road users**, following the School Street implementation. This indicates a **potential risk of worse road safety**

(Somerville Primary)
% agreeing that School Street road is safe[2]

From 19% to 47%

% agreeing that surrounding roads are safe[3]

From 29% to 40%

Our follow up residents' postal survey findings demonstrated **strong support for the School Streets initiative** as well as an **overall rise in the proportion of people who believed the school road and surrounding roads were safe**, compared to before the School Street was implemented, at both schools

There were some inconsistencies between the schools in the rigour with which the School Streets were stewarded by schools staff. We chose the two schools involved because of the difference in their surrounding road layouts. Nevertheless our findings at the two schools were broadly similar, and it was **not clear what gave rise to the small differences in impact we did find between the schools**.

[2] 6/32 respondents at baseline, 8/17 respondents at follow-up
[3] 6/21 respondents at baseline, 4/10 respondents at follow-up

Best practice – delivering school streets

Communication with **all stakeholders** is **essential** at **every stage** of your project.

Strong engagement and enthusiasm from the school, especially the **head teacher**, governors and senior leadership team.

Have a **designated website and email address** which is managed by **appropriate local authority colleague(s)** for the project.

Consider **long term project aims** and **possible permanent changes** that could be implemented.

Outline expectations and **responsibilities** in a **project brief pack** for participating schools.

Provide **support and training to your stewards** following guidance from your highways team. Include **best practice** and use **suitable and accessible equipment.**

Encourage modal change with **incentive or rewards** such as storage facilities or taking part in **walking or cycling challenges.**

Allow **plenty of time for** each **monitoring period and installing equipment.** Enable **"bedding in" period** before monitoring impact.

"So it's about having a very committed person or team of persons."

Headteacher, Hillstone Primary School

School Streets and Traffic Displacement

Practitioner’s Guide – School Streets

Practitioner’s Guide – School Streets

We share our knowledge and experience which have been addressed by our colleagues across the UK in order to support more authorities with launching and running their own school street projects.

These topics are covered in no particular order and each should be considered and planned carefully for all school street projects.

Whilst our research has found that school streets lead to overall falls in volume of traffic, with possible displacement to some degree on surrounding streets, this should not deter projects from taking place. The primary benefit of road safety has been measured as a low risk that can be adequately mitigated on the school street as well as surrounding roads.

Whilst developing your scheme, understanding the learnings from the best practice in some of the main areas that need consideration this will help you on your way to a successful school street project. Setting up a comprehensive programme with defined objectives which will transform the streets of your neighbourhood.

Whilst our knowledge has been collated from working in partnership with over 70 local authorities across the UK, every school location and road will differ and require consideration for its suitability for a school street model.

Above: Hillstone Primary Car Free School Street

Learning from the Research

Sustrans conducted four interviews with key stakeholders involved in the delivery of the Car Free School Streets programme.

These interviews were held in late October/early November 2021 to understand the process of delivering school street interventions and the impact of traffic and associated road safety issues.

The interviewees included;

- Travel Demand Manager and Senior Travel Demand Management Officer at Birmingham City Council
- Caretaker at Hillstone Primary school
- Headteacher at Hillstone Primary school
- Headteacher at Somerville Primary school

The following section includes material from the interviews alongside suggested best practice as discovered by Sustrans' delivery colleagues whilst organising, delivering and launching school street projects alongside partner local authorities.

No two school street sites are the same, and our suggested considerations can be adapted to suit your project and the location of your school street sites.

Steward at a school street closure point.
Credit Sustrans/ P Mitchell

School Street Best Practice – Long Term

Decide the long term outputs and aims of a project.

Objectives will vary for each local authority across the UK, and there is an opportunity for growth with government supporting more school streets being created as outlined in the Gear Change[4]. Many school streets across the UK were accelerated in 2020 due to Emergency Active Travel Fund available in response to the COVID-19 pandemic. The initial provisions of safer school runs has enabled local authorities, and Sustrans, to learn about the importance of the sustainability and long term intentions of school street projects.

- Making physical changes outside of the school can be a sustainable alternative to relying on volunteer stewards. Implementing changes on the road outside of a school requires budget and careful consideration to meet the needs of the school and wider community.
- Trialling schemes enables short term monitoring and help to develop suitable longer term solutions, with input from the local community.
- Launching school streets sites in phases, such as in Birmingham, can help develop and streamline the process of running schemes, especially when sites are physically varied.

“I’m supportive of the scheme if we had more support and more guarantees of what the consequences are of us running this for a longer period”

Hillstone Primary School staff member

“We will increase the number of school streets to protect children”

Gear Change [DfT], July 2020

[4] Cycling and walking plan for England - GOV.UK (www.gov.uk)

School Street Best Practice – Long Term

Physical changes outside of a school can help transform the school run. Whilst there are several solutions which have been trialled and implemented, not all school sites will be suitable for particular designs due to their location and access required. The examples of physical changes shared below will vary in cost, maintenance and accessibility for local traffic.

- Carriageway narrowing, top right, can slow motor vehicles (Ashton Gate, Bristol)
- Timed road closure, below right, with removeable bollards can restrict or stop motor vehicle movement on a school street (Whipton Barton, Devon)
- Modal filters, below centre, stops motor vehicle access (Florence Park, Oxford.)
- Bespoke thermoplastic raised table, below left, promotes road safety and alerts drivers to a crossing point (Balhousie Primary School, Perth)

School Street Best Practice – ANPR

Authorities in England will be able to use Automatic Number Plate Recognition (ANPR) to enforce school street schemes from June 2022. Statutory guidance document[5] from the DfT supports local authorities including how to approach, carry out and review enforcement.

- Local authorities need to apply to the Secretary of State for an order which provides them with enforcement powers.
- Department for Transport (DfT) have stated the need for public communication to share the reasoning and benefits of a scheme.
- Launching an ANPR scheme from the start can be a lot of admin work. Once established, the process becomes easier with each new site.
- The management of vehicle exemptions and penalty charge notices (PCNs) may sit with a parking permit team, project delivery officers or it could be outsourced.
- The estimated cost for ANPR camera installation is £25k to 35k per site[6]. Appropriate signage and power supplies also have to be installed.
- Consider appropriate number and positioning of enforcement cameras specific to the site. If resources are tight, you may wish to move cameras between sites.
- Complimentary measures, such as continuous footways, pictured right, could be installed alongside ANPR cameras.
- First time offences or those in the first month of launching, can be issued a warning notice.

“The changing of the TRO to being able to use [ANPR] cameras is quite exciting for us because I just feel that it takes away that stigma that’s attached to marshalling”
Birmingham City Council

[5] https://www.gov.uk/government/publications/bus-lane-and-moving-traffic-enforcement-outside-london
[6] https://www.pacts.org.uk/wp-content/uploads/Moving-Traffic-Briefing-Note-PACTS-MWiltshire.pdf

School Street Best Practice – Responsibilities

Provide a clear understanding of roles and responsibilities of the local authority departments, schools and other involved partners.

A recurring issue that came up during the interviews was how Birmingham City Council (BCC) programme staff felt left responsible for the scheme that they anticipated being handed over to local schools and communities. School staff agreed that they would need further support should the scheme continue long term, including equipment and staffing.
BCC programme staff also questioned whether the scheme should have been run by their team (Travel and Management), suggesting that the safety engineers would have been better placed to manage it as a Road Safety scheme.

- Create a network of local authority colleagues to input their knowledge into the project e.g. transport, highways, schools.
- Have a dedicated lead or team who oversees the project work and is the first point of contact.
- Outline expectations and responsibilities in a project brief pack for schools. This can include a project overview, risk assessment, application form and Memorandum of Understanding. If the authority are selecting school sites, headteachers should be fully engaged and supportive of the project and objectives.
- Work with the appropriate team(s) to provide a clear and simple process for schools to apply for school streets, including the traffic regulation order.

“We’re very pleased about what we’ve done, but we feel we’re at a point where if we continue maybe it’ll be a year, two years or whatever that we will need greater support....”

Hillstone Primary School

“We need to really think about the logistics of it, we’ve took it on as a team but as it grows does it really sit with our team or should it be put elsewhere to other places”

Birmingham City Council

“So it’s about having a very committed person or team of persons.”

Hillstone Primary School

School Street Best Practice - Monitoring

Monitoring should take place over as extended a time period as possible to help the changes embed in the community and understand the longer-term impact of school streets.

Council colleagues had difficulties with monitoring and getting data on the scheme. With the COVID-19 pandemic, this disrupted the data collection, as well as the pandemic leading to more families participating in active travel to school.

- Schemes in place longer are able to provide a better idea of how they embed in the community and change behaviour.
- A new project being launched including monitoring should be monitored a a minimum of six months after installation, with further monitoring after 12 – 14 months.
- Capture data over more days than needed as contingency. Collecting data on a specific set of days/weeks means the data is vulnerable to gaps or unexpected intervening factors on particular days (e.g., adverse weather, community events).
- Install monitoring equipment, e.g., ATC or air quality monitors, in good time prior to the data collection period, to allow for re-attempts if needed.
- Schools that use Modeshift STARS or Travel Tracker can capture modal behaviour data, which is useful as baseline and follow-up data.
- Offer incentives for completing surveys in order to encourage a higher response rate from parents and residents, e.g. a high street voucher.

Above: Surveys taken during School Street in Southampton.
Credit: Sustrans/P Mitchell

“The pandemic also has affected quite a lot of the data in my opinion because of the situation that’s happened and schools have been in and out that we haven’t really been able to capture true data like we might have had before”

Birmingham City Council

School Street Best Practice – Behaviour Change

Activities can be delivered at the school ahead of a launch to get people to think about how they travel.

The evidence is anecdotal as neither of the schools monitored had completed travel surveys. Everyone agreed that there were more people walking, cycling or scootering to school. Supporting pupils with resources and training can help support more walking, cycling and wheeling journeys to school.
Despite the minor use at Hillstone Primary, Park & Stride sites have worked successfully to support schools, helping families to walk or wheel the last section of their journey to school.

- Ask the school to complete a school travel plan and travel surveys before launching their school street.
- Promote safe routes to school from popular residential areas.
- Find and promote a local Park&Stride site, such as a pub, church or supermarket car park. Promotion can include a map with walk or wheeling routes highlighted.
- Ensure routes to school are safe by installing appropriate crossing points, widening pavements or removing barriers.
- Provide suitable bike and scooter storage at school sites, as well as training.
- Encourage and reward behaviour change for schools. Signing up to initiatives such as Modeshift, Sustrans Big Walk and Wheel or Living Streets Walk to School week can help encourage more walking and wheeling journeys.

“More parents are coming, walking to school with their children as well, and parking away from [the school]”
Somerville Primary, Headteacher

“There’s a big car parking area [a five minute walk away] and a playing field that they could go to. They choose not to. They park in the local areas.”
Hillstone Primary, Headteacher

“We’ve got a cycle shed cum scooter shed and we have scooter pods, as we call them. They are full all the time now with children that will come on their scooters; they’re really popular at the moment and their bikes.”
Hillstone Primary, Caretaker

School Street Best Practice - Communications

Informative communications with residents, parents and school staff is essential, using both council and school resources.

Communications can come in various formats from letters, emails, social media and blog content. It is an important process at every stage of your project, from consultation to notification of events or changes.

- Identify a communication plan as early as possible to cover each stage of your project. Share with partner organisations you may be working with.
- Produce a dedicated School street website with key information available to the public, including project aims, key dates and contact details.
- Where possible, offer in-person engagement events to listen to and address concerns raised by local residents. This is especially important for larger schemes or those with long term aims such as infrastructure changes or permit scheme. Events should be scheduled at different times, and days to accommodate as many people as possible.
- Consider the local community and if any communications should be distributed in languages other than English.
- Speak to any businesses directly impacted by a timed road closure face-to-face to help explain what is happening and address concerns.
- Share a FAQ document on your dedicated website and at public facing events. Share this document directly with key stakeholders.
- Arrange meetings with ward or district councillors to inform them directly about the scheme ahead of launching to answer any questions or concerns.

“The school has engaged local people with social media… The parents have become compliant because they’re constantly being nagged by the school to not come into the road.”

Birmingham City Council

“We carry flyers with us now which has got the website to be able to apply for the permit”

Caretaker, Hillstone Primary

“The letters [to residents] **are quite comprehensive, they talk about the closure and our aim of it… and then they have some FAQs on the back that talk about how things are gonna work …”**

Birmingham City Council

School Street Best Practice - Branding

Have a strong identity and objective for your project.

Birmingham programme staff strongly suggested rebranding the scheme as a safety scheme rather than as a sustainable travel scheme. They believe safety schemes achieve greater buy-in from parents and residents as it's harder to disagree with increasing children's safety than it is with enforcing sustainable lifestyle change.

- Consider the aims and outcomes of your project and agree on terminology you will use throughout any documents and communications.
- Branding is not essential for a project, however having a logo which people can instantly recognise as your project is highly valuable for larger scale project or schemes or where there will be a lot of community engagement.
- Having a dedicated email address and website is a simple but effective way for people to know they can easily get in touch or find out more information about your project eg SchoolStreets@authority.gov.uk

Branding examples:
Top right: Portsmouth City Council logo
Bottom far right: Lambeth Council poster
Right: East Sussex banner

School Street Best Practice - Stewarding

Support and encourage the school community stewards with training.

Stewarding for school streets relies on volunteers from the school community such as parents, school staff and occasionally residents. As revealed by this study, and typical at other locations, the commitment of volunteer stewards on long term projects can be difficult to maintain. To address this, there can be processes in place by local authorities and schools to support the community to have greater involvement in the management of their street;

- Consider a recruitment plan and rota.
- Be clear with volunteers how long the project will last and if there is any expectation to continue beyond any trial period.
- Support recruitment of volunteers with social media posts and contacting local community groups for help.
- Consider using a paid lead role, which can be a pivotal role in liaising between the volunteers, local authority and the school.
- All stewards should have a level training to cover what is expected of the role, details about the scheme and conflict management.
- To encourage more parent stewards, schools could consider support for child care, such as a club, activity or supervised time in the school library.
- Local authority colleague(s) should attend the first day or week to support the school with any teething issues and provide a degree of ongoing support to ensure the quality of the scheme.

Elsewhere, there are successful school street schemes that do not use stewards, however risks of road safety and enforcement need to be managed in a different way. Resident permit schemes, which are enforced by traffic or parking teams, is one alternative solution used by a number of local authorities.

“Some people don’t want to help with stewarding because you do get a bit of grief from people wanting to go down there.”

Hillstone Primary School

“I’d recommend that to people, that you all make sure you’ve got a rota, senior managers are out there all the time, monitoring and talking to them. It’s a nice way to start the day.”

Hillstone Primary School

School Street Best Practice – Steward Training

Training is important for all stewards to understand the responsibilities undertaken on delivering a school street. Site specific training enables stewards to safely close and re-open the road to motor vehicles.

- Certified traffic management training, such as LANTRA, qualifies people to deal with road works, carnivals or festivals, which are higher risk situations at a school street closures.
- Alternative training delivered by highways, traffic management or other external partners, including Sustrans, can be specially for a school street.
- Attendance of a full day training course for prospective stewards, such as school staff or working parents, can be a significant disincentive.
- Providing a shorter online or in-person training for the school makes this more convenient and attainable.

Sustrans and Playing Out worked in partnership to make a video resource to equip volunteers to steward and provide local authorities with the information to support school streets.

The How to Steward a School Street or Play Street[7] resource covers;

- Creating a Traffic Management Plan
- Barriers and Signage
- Stewarding
- Conflict Management
- Positive conversations

Above: Steward in Oxfordshire
Below: Still from “How to Steward a School Street or Play Street” instructional video

[7] https://www.youtube.com/watch?v=rcLVIldm56U

School Street Best Practice – Barriers and Signage

Provide suitable equipment for use.

Getting correct and usable equipment for the schools was a challenge BCC programme staff faced, and an aspect that will vary per authority and potentially school site.

- Consult with your local highways team about common and most appropriate barriers and signage to use. They might provide this equipment for your scheme or it may need to be outsourced.
- Provide equipment that is easy to manoeuvre, as metal signage can be difficult and heavy to handle.
- Consult with the school about storage of equipment and how easily accessible it would be for volunteers and staff.

“In Phase 1 we had some quite big chunky barriers that we used for the School Streets, they were totally impractical for people to carry out and put out”

Birmingham City Council

Bottom left: flexible banner on a barrier, Southampton
Bottom right: Concertina barrier and signage, Oxfordshire

School Streets and Traffic Displacement

Birmingham Car Free School Street

“I’d say 100% do it. 100% do it. I get to meet some lovely parents and I get to meet all the lovely children and it’s a nice part of the day and in the summer it is wonderful to do.”

Caretaker, Hillstone Primary School

School streets and traffic displacement research

Research objectives and methodology

Commissioned by The Road Safety Trust, Sustrans carried out research with support of Birmingham City Council to:

- understand the extent to which traffic displacement is caused by School Streets.
- assess any associated displacement of road safety issues onto adjacent streets as a result of the School Street (including high traffic volume, illegal parking, motor vehicle speed and unsafe road user interaction).
- measure perceptions of road safety on the School Street and adjacent streets, to assess any displacement of perceived safety issues.

We commissioned a literature review of the existing evidence on displacement of traffic and associated road safety issues around School Streets[8]. This was followed up with a field exercise to collect fresh evidence on two Schools Streets primary schools in Birmingham.

There were twelve schools taking part in Birmingham City Council's Car Free School Streets programme. We chose the schools in question to see if road layouts would make a difference, one school being on a cul-de-sac and the other being on a road with junctions at both ends. These schools were:

- **Hillstone Primary School** in Shard End
- **Somerville Primary School** in Small Heath

Data collection methods and characteristics assessed

Automatic Traffic Counters (ATCs)

Traffic Volumes
Traffic Speeds

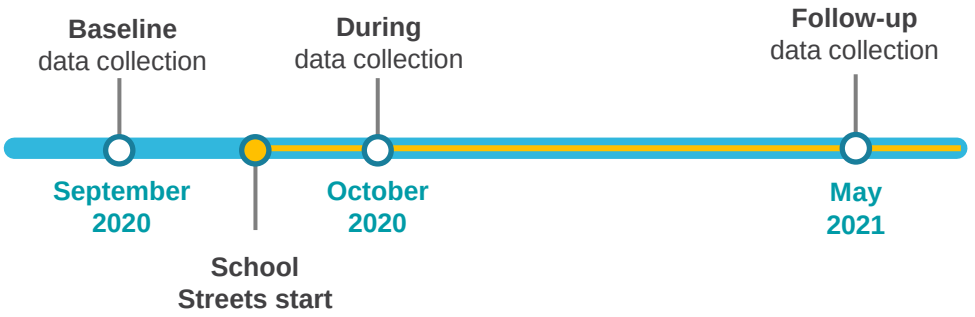
Video Monitoring

Illegal or unsafe parking
Road user interactions, including pedestrian crossings

Postal Surveys

Perception of road safety

Data Collection Timeline



8 The literature review can be accessed from https://www.napier.ac.uk/~/media/images/news/school-street-closures/school-streets-closure-traffic-displacement-literature-review-final2.pdf?la=en

Literature review

A review of existing evidence on the displacement of traffic and associated road safety implications was carried out for the project by Dr. Adrian Davis of Edinburgh Napier University and published in August 2020[9].

Dr Davis reviewed 16 previous studies of School Streets, none of which were peer reviewed and one of which was a Master's thesis. The locations covered by the studies included Camden, Edinburgh, Solihull, Perth and Kinross, East Lothian, Croydon, Southampton, and the region of Flanders, Belgium. This research was supplemented with five semi-structured interviews with local authority officers working on School Streets.

Mitigating Measures

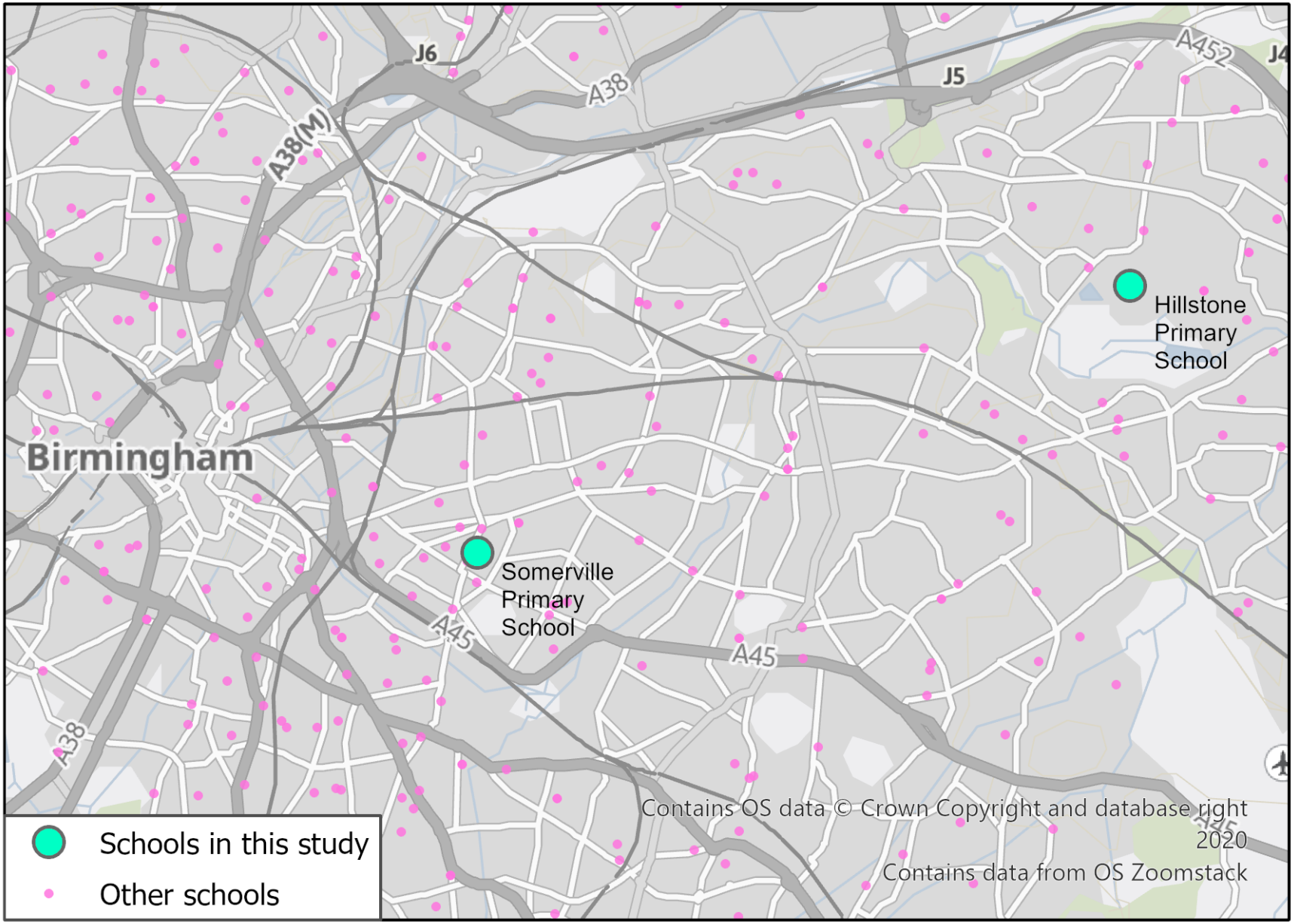
The literature review found evidence that any initial impacts of traffic displacement resulting from School Streets implementation can be mitigated, resulting in no adverse impacts over time and overall. Examples of these mitigating measures include: park and stride initiatives, alternative parking provision, zonal measures (e.g. filtered permeability), staggered start times, etc. The relevant mitigating measures will depend on each school context as this will determine the options available.

Overall, the review found :

- strong and consistent evidence that traffic displacement does not cause road safety issues of any significance and that mitigating measures, where needed, have been applied successfully
- medium strength evidence that in almost all cases the total number of motor vehicles on School Streets and neighbouring streets reduces
- medium strength evidence that perceived road safety on surrounding streets, as well as the School Streets, improves as active travel rises
- medium strength evidence that alternative parking schemes such as "Park and Stride" help reduce traffic displacement, although a small number of badly parked motor vehicles can remain an issue.

9 The literature review can be accessed from https://www.napier.ac.uk/~/media/images/news/school-street-closures/school-streets-closure-traffic-displacement-literature-review-final2.pdf?la=en

The Schools

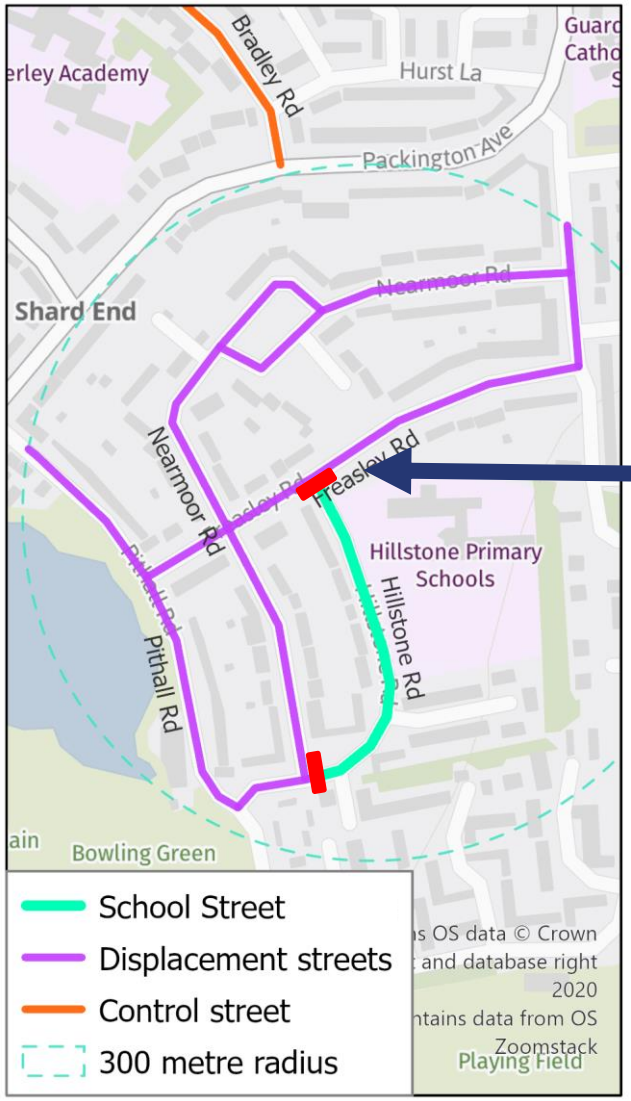

J6
A38
J5
A452
A38(M)
Hillstone
Primary
School
Birmingham
Somerville
Primary
School
A45
A45
A38
Schools in this study
Other schools
Contains OS data © Crown Copyright and database right 2020
Contains data from OS Zoomstack

The Schools

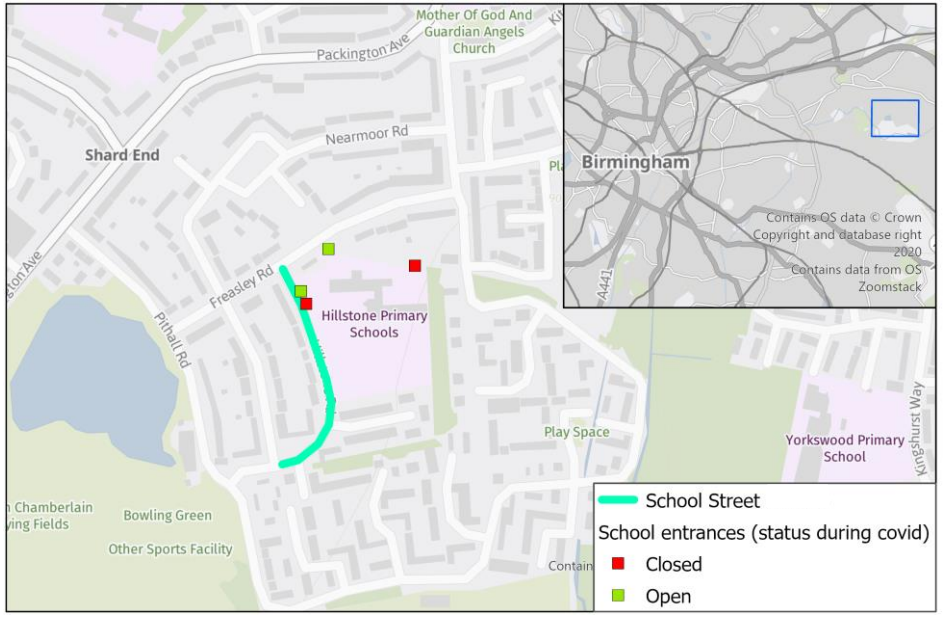
	Hillstone Primary School, Shard End	Somerville Primary School, Small Heath
Ward information	Hillstone Primary School is located to the east side of Birmingham in Shard End, an outer city ward. The ward is one of the more deprived areas of the city where average income levels are below those for the city as a whole. Nationally, the ward ranks in the top 10% most deprived ward, and 25.6% of the population of Shard End is under the age of 18.[10]	Somerville Primary School is located in an inner city ward Small Heath, which is located to the south east side of Birmingham. The ward is one of the more deprived areas of the city and had the 4th lowest average income. Small Heath has a younger population with of 36.9% under the age of 18, compared to 25.5% as the city average.[11]
Number of Pupils (with SEN)	509 (25%)	771 (15%)
Children eligible for free school meals	50.6%	36.6%
Catchment area	Up to 1 – 1.3 miles from school	Up to 0.5 miles from school
School Travel	47% car (based on 2013/14 Hands Up Survey data)	23% car (based on 2012/13 Hands Up Survey data)
Points of Closure	2	1
Enforcement time	8.15 to 8.45am and 3.00 to 3.30pm	8.15 to 9.15am and 2.45 to 3.45pm
Enforcement	Traffic signage and stewards at both school runs	Traffic signage and stewards predominantly mornings

[10] Birmingham ward information; https://www.birmingham.gov.uk/download/downloads/id/15497/shard_end_profile.pdf
[11] Birmingham ward information: Small Heath | Birmingham City Council

Hillstone Primary School, Shard End



Hillstone Primary School's Car Free School Street has two closure points; one at the junction of Freasley Road to the north, and to the south at the junction of Nearmoor Road. The surrounding roads at either end were of concern for displacement.

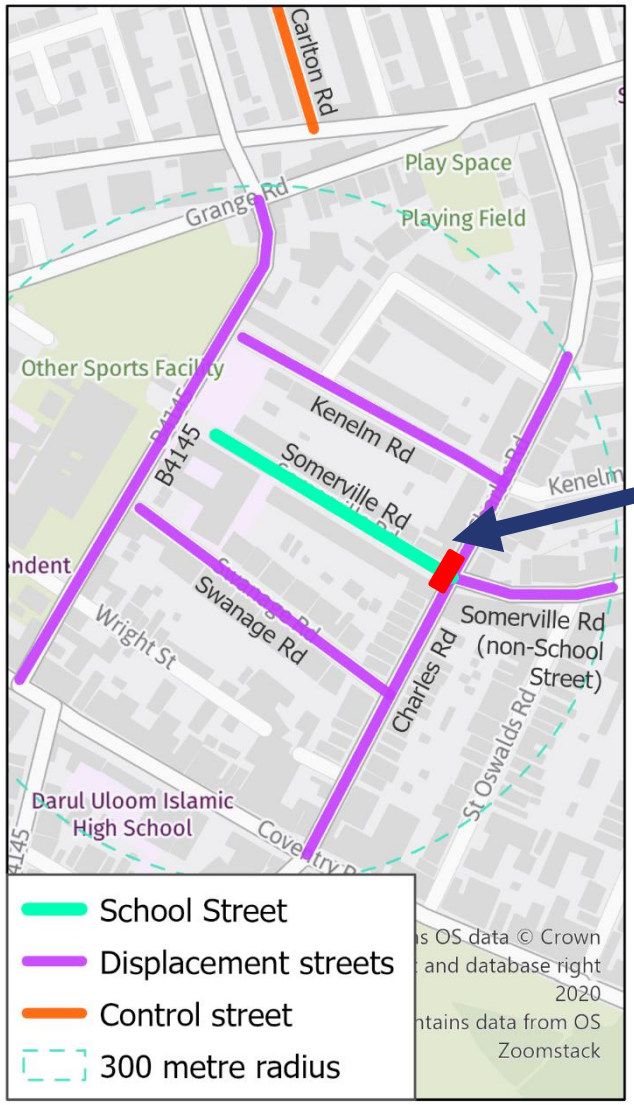


Above: Photo of the closure point at Hillstone Road and Freasley Road with 'dollies' used by the school.

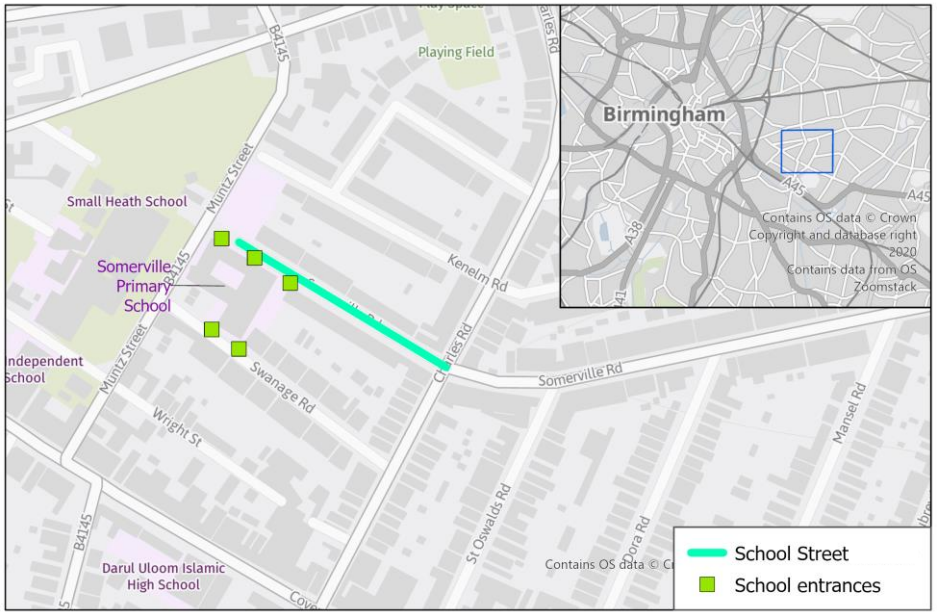
Far Left: Map of the School Street and monitored roads. Red marks closure points of the School Street.

Left: Map of school entrances

Somerville Primary School, Small Heath



Somerville Primary Car Free School Street has one closure point as Somerville Road is a no through road. The surrounding roads at either end of Somerville Road were of concern for displacement. At the western end is the B4145 which has pedestrian access only to the school. Someville used all entrances to the school site during Covid-19, two of which were not located on Somerville Road where the Car Free School Street is located.



Above: Photo of the closure point at Somerville Road and Charles Road

Far left: Map of the School Street and monitored roads. Red marks closure points of the School Street.

Left: Map of school entrances

School Streets Implementation

Both School Streets were run similarly using stewards, traffic signage and cones at the entrance to the School Street. The presence of stewards at the closure points meant they could enforce the closure and manage the motor vehicles that were allowed entry within the closure. Exemptions for the closure include residents, blue badge holders and emergency services. Motorised vehicles driving on the school road without a permit during the restrictions could be issued with a Fixed Penalty Notice charge of £50. The stewarding was undertaken by school staff members, though Birmingham City Council arranged for Police Officers and Police Community Support Officers to occasionally support enforcement of the School Streets, particularly in the period following the initial implementation of the scheme.

Above: Stewarding and traffic signage at Hillstone Primary

“The parents tell me that they feel safer, that they know that the children are not going to dash between parked cars.”

Headteacher, Hillstone Primary School

“It’s good when the police officers come down, because when the police officers come down you see less cars by the school.”

Headteacher, Somerville Primary School

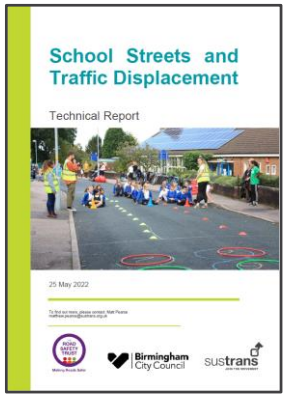
Findings

The key findings from this research are broken down by data collection method, with highlighting of the relevant evaluation objectives (shown in the table to the right) and data.

Three different methods were used to collect data around both schools, and the data collection periods for each method has been outlined in the table below.

- Automatic Traffic Counters (ATCs)
- Video Monitoring
- Postal Surveys

Further detail on the data collected and comprehensive analysis can be found in the Technical Report.



Project's Evaluation Objectives
A. Understand the extent to which **traffic displacement** is caused by School Streets
B. Assess any associated displacement **of road safety issues onto adjacent streets** as a result of the School Street (including high traffic volume, illegal parking, motor vehicle speed and unsafe road user interaction).
C. Measure **perceptions of road safety** on the School Street and adjacent streets, to assess any displacement of perceived safety issues.

	Baseline (2020)		During intervention (2020)		Follow-up (2021)	
	Somerville	Hillstone	Somerville	Hillstone	Somerville	Hillstone
Automatic Traffic Counters	21st – 25th Sep 2020	14th – 20th Sep 2020	12th – 18th Oct 2020	12th – 18th Oct 2020	10th – 16th May 2021	10th – 16th May 2021
Video monitoring	21st – 25th Sep 2020	16th – 23rd Sep 2020	12th – 16th Oct 2020	12th – 16th Oct 2020	10th – 14th May 2021	10th – 14th May 2021
Postal surveys	13th – 28th Sep 2020	13th – 28th Sep 2020	N/A	N/A	4th – 21st Apr 2021	4th – 21st Apr 2021

Automatic Traffic Counters (ATCs) - Volume

We compared volumes of traffic during the School Street hours at the different monitoring phases (baseline versus during intervention, and baseline versus follow-up) and locations. The monitoring points around each school are shown in Appendix 2.

Project's Evaluation Objectives
A. Understand the extent to which **traffic displacement** is caused by School Streets

The analysis examined if there had been:

- **displacement from one road to another**
- **evaporation of traffic from the school area.**

Overall findings:

- during the School Street hours, overall average traffic volumes across the school road and surrounding roads fell between baseline and follow-up phases, by 8% (from 3,880 to 3,587 motor vehicles) around Hillstone School, and by 3% (from 3,462 to 3,357 motor vehicles) around Somerville School. This is likely to have had an overall positive impact on road safety
- on some surrounding roads, there were slight increases in traffic between baseline and follow-up phases. This was more significant at Somerville Primary, which could be partly due to traffic displacement
- the traffic volume at both control sites rose from baseline to follow-up (by 3% at Hillstone and 10% at Somerville).
- in addition, outside of the School Street time windows, overall traffic levels across the same roads rose compared to before the School Streets. This suggests that a degree of traffic evaporation (the disappearance of traffic when road space is reallocated away from motorised vehicles) had occurred as a result of the School Streets.

Above: Hillstone Road Car Free School Street

Automatic Traffic Counters (ATCs) - Speed

Overall findings:

At Hillstone Road School Street, the average car speed rose slightly after the School Street was brought in, posing a potential safety risk, although the speeds both before and after were relatively low. Due to insufficient data, we were unable to make conclusions for the Somerville Road School Street.

Project's Evaluation Objectives

B. Assess any associated displacement **of road safety issues onto adjacent streets** as a result of the School Street (including high traffic volume, illegal parking, motor vehicle speed and unsafe road user interaction).

During the School Street enforcement window, the evidence suggests that motorised vehicles permitted to travel through Hillstone Road were able to travel faster, on average, than at baseline. Comparing baseline and follow-up phases, in the morning School Street window the average speed rose from 16.3 mph to 17.4 mph, and rose from 15.3 mph to 16.3 mph in the afternoon window. The increase in speed in the morning was statistically significant, but the change in the afternoon was not. This does pose a potential safety risk to pupils, although it should be noted that the speeds both before and after the School Street implementation were relatively low.

On the neighbouring roads to Hillstone Road, Freasley Road and Pithall Road, there was a slowing down of traffic which may provide a safer environment for pupils walking to or from school via these roads. However, there is potential for lower speeds to interact with increased congestion in a 'trade-off' and this ought to be considered on a road by road basis.

Near the T-junction of Freasley Road, which connects to the school road and a closure point, average speeds fell in both the morning and afternoon hours (from 21.7 mph to 19.2 mph in the morning, and 19.2 mph to 18.6 mph in the afternoon, from baseline to follow-up). The reduction in speed in the morning was statistically significant, but the decrease in the afternoon was not. This is consistent with the rise in traffic volume and rise in interactions (see video monitoring section) from baseline to follow-up.

The speed limit was 30mph across all the monitoring locations, there was not any evidence of the average speed of traffic being over the speed limit at any of the locations across any of the data collection phases.

85th percentile speed values showed patterns of change that were consistent with the average speed values. Summaries of the average speed and 85th percentile speed values are presented in the Technical Report.

Video Monitoring

The video monitoring data was analysed to assess:

- **illegal or hazardous parking and driving behaviour**
- **traffic interactions**
- (see Appendix 3 and 3.1) or the Technical Report for full details.

Project's Evaluation Objectives

A. Understand the extent to which **traffic displacement** is caused by School Streets

B. Assess any associated displacement **of road safety issues onto adjacent streets** as a result of the School Street (including high traffic volume, illegal parking, motor vehicle speed and unsafe road user interaction).

Overall findings:

Our video monitoring showed that the School Streets had an impact on parking behaviour with an increase in the number of parked cars near the entrance to the School Street, and a higher number of parking cars interacting with other road users.

The severity (e.g. a road user having to stop more imminently to avoid collision) of interactions did not increase as a result of the School Streets, but the increased number of interactions indicates a potential risk of worse road safety in these locations

Camera views. (from left to right) Hillstone video 1, Hillstone video 2, Hillstone video 3, Somerville video 1, Somerville video 2.

Video monitoring locations. Left Hillstone Road, Right Somerville Road

Postal Surveys

Overall findings:

The follow-up residents' survey findings demonstrated strong support (albeit amongst a relatively small sample) for the School Street initiative as well as an overall rise in the proportion of people who believed the school road and surrounding roads were safe, compared to before the school street was implemented. The survey sample was 82 respondents at baseline and 71 respondents at follow-up.

Project's Evaluation Objectives

C. Measure **perceptions of road safety** on the School Street and adjacent streets, to assess any displacement of perceived safety issues.

Paper surveys (along with cover letters and prepaid return envelopes) were mailed to residents of the School Street itself and of the surrounding streets, at baseline and follow-up. A £50 shopping voucher prize draw was offered to participants at both baseline and follow-up. The postal survey was mailed to circa 500 households at both baseline and follow-up.

The survey was designed to obtain evidence on changes in the perception of safety, traffic volumes, speeds and parking on the School Street itself and neighbouring streets. The following table shows response rates for the perception survey across both schools.

School	Baseline			Follow-up		
	Number of surveys sent	Number of responses received	Number of responses from residents living on School Street	Number of surveys sent	Number of responses received	Number of responses from residents living on School Street
Somerville Primary School	554	32	7	554	23	3
Hillstone Primary School	504	50	9	504	48	11

Stewarding

Overall findings:

The two schools differed to one another in terms of the consistency of the stewarding of the School Street closure points. The schools were deliberately chosen with different road layouts around the schools; Hillstone Primary having two closure points and Somerville Primary with a single entry point to manage. Whilst our findings were broadly similar between them, it was not clear from the evidence we were able to collect what gave rise to the small differences in impact we did find between the schools

From the video monitoring that was conducted, it was possible to observe the consistency of stewarding.

- At Hillstone Primary School, we observed that the marshalling started and stopped at roughly the same time (i.e. within a couple of minutes) as the times indicated on the signage

- The stewarding was less consistent at Somerville Primary School mostly due to staff shortages and the Covid-19 pandemic. The stewarding started and finished at variable times, or occasionally no stewarding being carried out at all, during the monitored period

The consistency of stewarding is likely to have influenced the impact of the School Streets, with a greater degree of compliance to the restrictions expected at Hillstone Primary School than at Somerville Primary School.

Project's Evaluation Objectives
B. Assess any associated displacement **of road safety issues onto adjacent streets** as a result of the School Street (including high traffic volume, illegal parking,motor vehicle speed and unsafe road user interaction).

Above: Observed stewarding at Somerville Primary

"Certainly those schools that have, what I would say, marshal consistently, have seen a better impact and you'll probably see that at Hillstone."

Birmingham City Council

Research findings

The findings from this research add to the understanding of traffic displacement and road safety impacts around School Streets.

By generating a specific methodology that is supported by a literature review and utilises more monitoring tools than in previous studies, this research provides a rigorous investigation into the full picture of the impacts, and can be used as a starting point for future research

Primarily, this study finds that School Streets lead to **overall falls in volume of traffic** and although **traffic may be displaced to some degree** to surrounding streets this **does not cause the risk of road safety issues** that cannot be adequately mitigated

Following the implementation of School Streets at both schools, **perceptions of safety improved** on both the School Street road and on surrounding roads

We found some change in the direction and extent of impact of both School Streets over time, suggesting that there is a '**bedding in' period** for such schemes.

The full Technical Report is available at:
https://www.roadsafetytrust.org.uk/funded-projects/sustrans?rq=sustrans

Top right: Somerville Primary Car Free School Street
Below right: Freasley Road video monitored location at the junction with Hillstone Road

Lessons learned from the research

This research has established the following lessons learned in how to carry out data collection to capture the impact of school streets, and in particular to measure the impacts on road safety:

- Data collection should be led by school street objectives. In this case, data collection was focussed on measuring the road safety impacts of school streets.
- Data collection around school streets will depend on the specific road and street layout for each school
- Our study observed a ‘bedding in’ of school streets that affected data collection. As a result, monitoring data should be captured at more than one point to capture the sustained impact of any school streets.
- Understanding road safety involves measuring both traffic behaviour through motorised vehicle counts and community/resident perceptions of safety
- Installation of traffic counter equipment may require multiple visits to install (e.g. parked cars blocking installation site), plan for a longer time window of data collection than needed or contingency if you want to capture a specific time period.
- Video data provides a rich understanding of driver and parking behaviour in response to school streets. Consideration should be given to where to install cameras to capture the most useful footage.

Data collection at Big Pedal 2019 school street event
Credit: Sustrans/P.Mitchell

Appendix

Appendix 1 - Terminology

Traffic displacement: the movement of traffic flows from one road to another; in this study, taken to be in response to the closure of the street outside a school meaning cars may take another route.

Surrounding streets: in this study, taken to mean those streets which either have a junction connecting to the road on which the School Street is taking place, lie parallel to the School Street, or lie within roughly 300 metres of the School Street.

'Steward' or 'Marshal': A person supporting set up of the timed road closure by moving barriers into place and/or enforcing closure points.

Data collection phase: a period of time at which data is collected from a range of monitoring tools, and repeated at three iterations to capture road safety changes in relation to the School Street.

'Baseline' data collection phase: the first data collection phase, to capture what road safety was like before the School Street took place.

'During intervention' data collection phase: the second data collection phase, to capture what road safety was like shortly after the School Street was implemented.

'Follow-up' data collection phase: the third and final data collection phase, to capture what road safety was like several months in to the School Street being implemented.

Automatic traffic counter: equipment which is installed at the side of a road to digitally record the number and speed of motorised vehicles crossing tubes laid across the road.

Video monitoring: a monitoring tool whereby footage of the road is recorded on-site, then visually analysed off-site to quantify a number of indicators relating to road safety, such as interactions between motor vehicles and pedestrians.

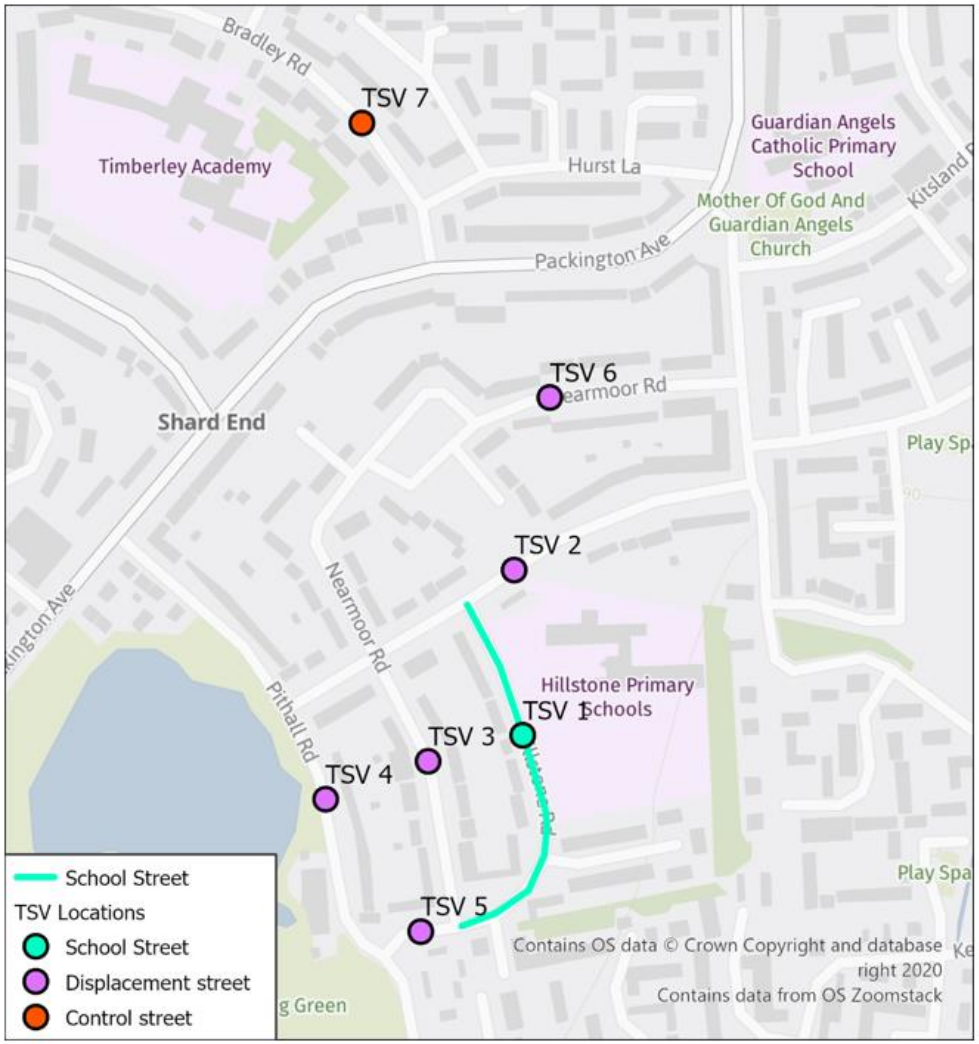
Postal survey: a monitoring tool whereby paper questionnaires are mailed to residents, self-completed and returned via pre-paid envelope.

Traffic volumes: the number of motorised vehicles travelling past a fixed point along a road over a certain period of time; in this study collected over 5 days and reported as either the mean average daily traffic volume or 5-day total traffic volume, during the School Street hours.

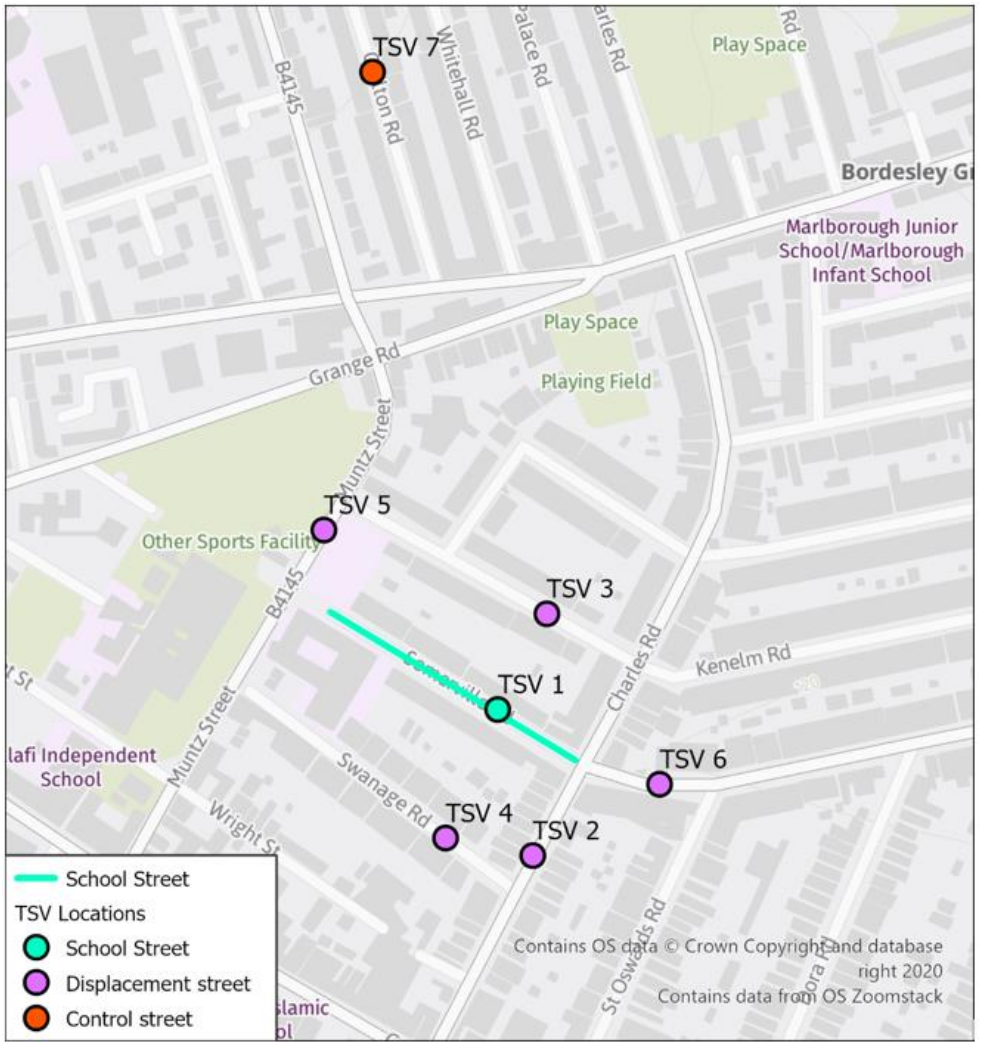
Traffic speeds: the speed of motorised vehicles travelling past a fixed point along a road over a certain period of time; in this study collected over 5 days and reported as the mean average traffic speed over the 5 days, during the School Street hours

Appendix 2 - Automatic traffic counter (ATC) locations

Automatic traffic counters (ATCs) were placed in three key locations: on the School Street (TSV1), on surrounding streets to measure displacement (TSV 2-6) and a control street (TSV7). These were in place to count vehicle s and record their speeds for seven days of 24-hour data recording at each data collection phase.



Hillstone Primary School



Somerville Primary School

Appendix 3.1 – Video Monitoring Locations

Car Free School Street video monitoring locations. Closure areas are shown in blue and locations of camera monitoring highlighted in red.

Far left: Hillstone Road,
Near left: Somerville Road

Appendix 3.2 – Severity of interactions

Level	Severity of interactions
0	No interaction with another road user/pedestrian
1	One participant required to manoeuvre, stop or slow down to avoid the another, but with ample time
2	Both participants required to manoeuvre, stop or slow down to avoid one another, but with ample time
3	One participant required to suddenly manoeuvre, stop or slow down to avoid the another, resulting in a near miss situation
4	Both participants required to suddenly manoeuvre, stop or slow down to avoid one another, resulting in a near miss situation
5	Light contact is made between the two parties, but no injuries
6	Full contact is made between the two parties, requiring emergency action

Project Partnership

The Road Safety Trust

The Road Safety Trust is dedicated to achieving zero deaths and serious injuries on UK roads. As an independent grant-giving charity, The Road Safety Trust funds vital research and practical interventions committed to reducing the number of people killed or injured on our roads.

Birmingham's Car Free School Streets

The research project monitored Birmingham City Council's (BCC) ongoing scheme of School Streets, known as 'Car Free School Streets'[12]. After a successful pilot year in 2019 involving six schools, twelve schools in Birmingham have been implementing School Streets for the 2020 - 2021 academic year. There is no Sustrans delivery associated with these School Streets; Birmingham City Council implemented them independently of Sustrans' monitoring.

Sustrans

Monitoring and evaluation was completed by Sustrans on behalf of The Road Safety Trust, using a number of measures between 2020 and 2021. The charity makes it easier for people to walk and cycle, and have supported school street projects across the UK since 2017.

[12] For more information on this scheme, see https://www.birmingham.gov.uk/info/20163/safer_greener_healthier_travel/1891/car_free_school_streets

Relevant Links

School Streets and Traffic Displacement: Technical Report

Birmingham Car Free School Streets

Sustrans School Streets

To find out more on the School Streets and Traffic Displacement Technical report, you can contact:
Matt Pearce, Senior Evaluation Officer
matthew.pearce@sustrans.org.uk

To find out more about Sustrans School Streets, you can contact:
education@Sustrans.org.uk

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