

Synthesis title:

Safe Route Planning

Category: Pedestrians



Other Relevant Topics:

- ▶ Child (Pedestrians)
- ▶ Teenagers (Pedestrians)
- ▶ Adults (Pedestrians)
- ▶ Older (Pedestrians)
- ▶ Mobility Impaired (Pedestrians)
- ▶ Street Lights (Roads)
- ▶ Pedestrian (Roads)

Keywords:

Route Planning:
Pedestrians,
Wayfinding, Education,
Safe Routes to School

About the Road Safety Observatory

The Road Safety Observatory aims to provide free and easy access to independent road safety research and information for anyone working in road safety and for members of the public. It provides summaries and reviews of research on a wide range of road safety issues, along with links to original road safety research reports.

The Road Safety Observatory was created as consultations with relevant parties uncovered a strong demand for easier access to road safety research and information in a format that can be understood by both the public and professionals. This is important for identifying the casualty reduction benefits of different interventions, covering engineering programmes on infrastructure and vehicles, educational material, enforcement and the development of new policy measures.

The Road Safety Observatory was designed and developed by an Independent Programme Board consisting of key road safety organisations, including:

- ▶ Department for Transport
- ▶ The Royal Society for the Prevention of Accidents (RoSPA)
- ▶ Road Safety GB
- ▶ Parliamentary Advisory Council for Transport Safety (PACTS)
- ▶ RoadSafe
- ▶ RAC Foundation

By bringing together many of the key road safety governmental and non-governmental organisations, the Observatory hopes to provide one coherent view of key road safety evidence.

The Observatory originally existed as a standalone website, but is now an information hub on the RoSPA website which we hope makes it easy for anyone to access comprehensive reviews of road safety topics.

All of the research reviews produced for the original Road Safety Observatory were submitted to an Evidence Review Panel (which was independent of the programme Board), which reviewed and approved all the research material before it was published to ensure that the Key Facts, Summaries and Research Findings truly reflected the messages in underlying research, including where there may have been contradictions. The Panel also ensured that the papers were free from bias and independent of Government policies or the policies of the individual organisations on the Programme Board.

The Programme Board is not liable for the content of these reviews. The reviews are intended to be free from bias and independent of Government policies and the policies of the individual organisations on the Programme Board. Therefore, they may not always represent the views of all the individual organisations that comprise the Programme Board.

Please be aware that the Road Safety Observatory is not currently being updated; the research and information you will read throughout this paper has not been updated since 2017. If you have any enquiries about the Road Safety Observatory or road safety in general, please contact help@rospa.com or call **0121 248 2000**.

How do I use this paper?

This paper consists of an extensive evidence review of key research and information around a key road safety topic. The paper is split into sections to make it easy to find the level of detail you require. The sections are as follows:

Key Facts	A small number of bullet points providing the key facts about the topic, extracted from the findings of the full research review.
Summary	A short discussion of the key aspects of the topic to be aware of, research findings from the review, and how any pertinent issues can be tackled.
Methodology	A description of how the review was put together, including the dates during which the research was compiled, the search terms used to find relevant research papers, and the selection criteria used.
Key Statistics	A range of the most important figures surrounding the topic.
Research Findings	A large number of summaries of key research findings, split into relevant subtopics.
References	A list of all the research reports on which the review has been based. It includes the title, author(s), date, methodology, objectives and key findings of each report, plus a hyperlink to the report itself on its external website.

The programme board would like to extend its warm thanks and appreciation to the many people who contributed to the development of the project, including the individuals and organisations who participated in the initial consultations in 2010.

Key facts

- “In 2 per cent of RTIs involving pedestrian casualties, *pedestrian crossing road masked by stationary or parked vehicles* was reported as a contributory factor.”

(RRCGB, DfT, 2017)

- Children aged 5 to 8 are consistently better at selecting when to cross, than selecting where to cross.

(S. Wood *et al.*, 2003)

- It is possible to predict sub-groups of children who exhibit the riskiest pedestrian route behaviour based on certain demographic factors. These are: young age (5 to 7 years old), ethnic minority status, low family income or low inhibitory control.

(B. Barton and D. Schwebel, 2006)

- By the age of 11 adolescents typically have safe route planning skills and safe route planning is not a strong determinant of the poor road safety record of this age group (compared to, for example, risk taking).

(A. Tolmie *et al.*, 2006)

- Having parents administer training to children in small groups has proved effective, and is thought to be a cost effective option.
- Classroom or computer administered training for children can realise similar improvements to practical roadside training.

(J. Thomson, 1997)

- Pedestrian route selection is typically determined by the shortest, fastest or most convenient route. Although road safety is an important consideration in adult route selection, it is clearly of less importance than convenience.

(A. Agrawal *et al.*, 2008)

Summary

This synthesis specifically covers the location and navigational aspects of pedestrian safety. Pedestrians of all ages, backgrounds and abilities are in scope, however the great majority of relevant material identified during this research is linked to children.

Safe route planning is an important element of pedestrian safety and has been identified as being of strategic importance by the UK government. The scope of safe route planning ranges from selection of safe places to cross the road (particularly pertinent to young children), through to safe wayfinding in urban environments.

Pedestrians have clear preferences for the shortest and fastest routes. In light of this, wayfinding initiatives which have safety objectives should ensure that the shortest or fastest route is also the safest. Consequently, the planning of safe routes is best carried out at the local level.

Safe route planning can be particularly beneficial for children. It is possible to predict sub-groups of children who exhibit the riskiest pedestrian route behaviour based on certain demographic factors. These are: young age (5 to 7 years old), ethnic minorities, low family income or low inhibitory control.

Pre-adolescent children have not yet developed route planning skills. They are better at determining *when* to cross, rather than identifying a safe route or recognising the dangers of obstructed visibility. Various education programmes have shown successes in improving behaviour of 5 to 8 year old children when selecting safe crossing routes.

For all age groups there are gaps in knowledge relating educational and behavioural improvements with actual improvements in casualty figures. For this reason, many of the benefits from initiatives are assumed rather than proven against casualty trends.

In the UK it is difficult to realise benefits from safe route planning since there are very few laws aimed at pedestrians. There are prohibitions from using motorways and laws regarding loitering on crossings, but nothing else to prevent pedestrians crossing the road. Since jaywalking is not prohibited, pedestrian desire lines are more likely (in the absence of education) to predominate in route planning behaviour in the UK – to the possible detriment of safety.

Methodology

This synthesis specifically covers the location and navigational aspects of pedestrian safety.

This synthesis was compiled during July 2012.

A detailed description of the methodology used to produce this review is provided in the Methodology section of the Observatory website at <http://www.roadsafetyobservatory.com/Introduction/Methods>.

The steps taken to produce this synthesis are outlined below:

- **Identification of relevant research** – searches were carried out on pre-defined research (and data) repositories. As part of the initial search some additional information sources were also consulted, which included <http://www.ingentaconnect.com>, <http://www.walk21.com>, www.A2Bsafely.com and <http://www.sustrans.org.uk>. Search terms used to identify relevant papers included but were not limited to:
 - 'Safe route';
 - 'Route planning';
 - 'Pedestrian routes';
 - 'Crossing';
 - 'Navigation'; and,
 - 'Wayfinding'.

A total of 34 pieces of relevant research were identified. Of these, 21 pieces of research focussed on children.

- **Initial review of research** – primarily involved sorting the 34 items, based on key criteria, to ensure that the most relevant and effective items went forward for inclusion in this synthesis. Key criteria included:
 - Relevance – whether the research has adequate focus on pedestrian routes and linkages to road safety.
 - Provenance – whether the research is relevant to pedestrians, road safety policies or road safety professionals in the UK.
 - Age of research – whether the research has been published within the last 15 years.
 - Effectiveness – whether the research credibly proves (or disproves) the effectiveness of an intervention related to safe route planning road safety.

Following the initial review, 17 pieces of research were taken forward to form the basis for this synthesis.

- **Detailed review of research** – key facts, figures and findings were extracted from the identified research to highlight the relevant road safety issues and interventions.
- **Compilation of Synthesis** – the output of the detailed review was analysed for commonality and a synthesis written in the agreed format. Note that the entire process from identifying research to compiling the synthesis was a time-bound exercise.
- **Review** – the draft synthesis was subjected to extensive review by a subject matter expert, proof reader and an independent Evidence Review Panel appointed by the DfT.

Much of the research relating to safe route planning focuses on children and their relative ability to identify safe crossing routes. This synthesis focuses only on the components of the research relative to safe route planning; other key findings are documented in other syntheses relating to pedestrian road safety.

Please note that the terms Great Britain and UK have been reproduced in this synthesis as they have been used in the associated references.

Key statistics

This section collates key statistics relating to safe route planning.

Demographics

By way of context, headline pedestrian casualties are presented for Great Britain in 2011:

- Total 26,198 casualties, including 453 fatalities;
- Young person (aged 0 to 17 years) 9,022 casualties, including 47 fatalities;
- Adults (aged 18 to 59 years) 12,674 casualties, including 222 fatalities; and,
- Older (aged 60 and over) 3,913 casualties, including 184 fatalities.

(P. Kilbey *et al.*, 2011)

Contributory factors

Route and particularly road crossing choices are significant contributory factors in pedestrian Road Traffic Incidents (RTI):

- “In 16 per cent of accidents involving pedestrian casualties, *pedestrian crossing road masked by stationary or parked vehicles* was reported as a contributory factor.”
- In 6 per cent of RTIs involving pedestrian casualties, *wrong use of pedestrian crossing facility by pedestrian* was reported as a contributory factor.
- Note however that contributory factors are subjective and may not be consistently recorded. Hence the above statistics should be considered indicative only.

(P. Kilbey *et al.*, 2011)

Note

This review includes statistics from Reported Road Casualties Great Britain 2011, which were the latest available data when the review was written. In December 2017, statistics from Reported Road Casualties Great Britain were updated to [Reported Road Casualties Great Britain 2016](#).

Route selection

Pedestrians walking to rail stations in cities in North America were questioned on their route choices:

- By far the most important factor in route choice was the shortest, fastest (or most convenient) route.
- When asked an open-ended question, safety was the second most common response (mentioned by 28 per cent of respondents) in determining route choice.
- When presented with a closed ranking question, safety was considerably more important to respondents' routes – having traffic devices present (85 per cent) and having traffic moving at safe speeds (87 per cent) were very or somewhat important.
- Note however that respondents were all from a specific sub-group (regular rail commuters). Agrawal *et al.*, 2008)

Education

Children can be trained to improve their selection of safe crossing points. Following *Kerbcraft* training schemes in England and Scotland:

- “Trained and control groups showed similar levels of construction of ‘safe’ routes before the intervention (17 per cent). This rose to 28 per cent in trained children immediately after training (post-test 1) and to 20 per cent in control children.”
- “At post-test 2 (two to four months later) trained children had further increased their safe scores to 44 per cent, whereas control children’s scores had risen moderately to 29 per cent.”

(K. Whelan *et al.*, 2008)

Smaller-scale, individually administered training has the potential for even greater benefits in children’s safe route planning skills:

- Following training, the safe route planning performance of 5 year olds improved almost to the level of 11 year olds. Gains made in both the classroom and practical training gave broadly similar improvements.

(J. Thomson, 1997)

Research findings

Summaries of key findings from several research reports are given below. Further details of the studies reviewed, including methodology and findings, are given in the References section.

The significance of safe route planning can largely be linked to the age of pedestrians – most interventions are aimed at younger pedestrians.

Children

- Children aged 5 to 8 are consistently better at selecting when to cross, than selecting where to cross.

(S. Wood *et al.*, 2003)

- It is possible to predict sub-groups of children who exhibit the riskiest pedestrian route behaviour based on certain demographic factors. These are: young age (5 to 7 years old), ethnic minority status, low family income or low inhibitory control.

• Barton and D. Schwebel, 2006)

Adolescents

- Adolescent pedestrians exhibited safe route finding skills which tended to increase gradually with age. However, the relationship was not found to be strong.
- This suggests that by the age of 11 adolescents typically have safe route planning skills and that safe route planning is not a strong determinant of the poor road safety record of this age group (compared to, for example, risk taking).

(A. Tolmie *et al.*, 2006)

Children's education

- There are some road safety resources for older children and teenagers which consider specifically safe routes planning. Road Safety Scotland's Roadways resource is an example – it envisages delivery via youth groups and stresses the significance of adults acting as road safety role models. (Road Safety Scotland, 2010)

Route based interventions - children

- Safe Routes to School have been widely introduced in North America. The primary aim of the initiative is to increase non-motorised mobility rather than to make road safety improvements, and it has been postulated that consequent increases in walking and cycling have resulted in increased child casualties.
- However, a study of RTI databases has refuted this – the evidence does not show that Safe Routes to Schools has increased casualties. However, there is insufficient evidence to credit the initiative with casualty reductions. (R. Blomberg *et al.*, 2008)

Route based interventions – adults

Interventions for adults tend to be route or location based rather than focussed on education.

- There has been a move from cluster-based investment towards route based investment. Route based approaches are more holistic and support risk based approaches to vulnerable users.
- However, route based interventions make it more difficult to measure outturn benefits (compared to traditional cluster interventions).
(Aecom, 2011)
- Route selection is typically determined by the shortest, fastest or most convenient route. Although road safety is an important consideration in adult route selection, it is clearly of less importance than convenience.
(A. Agrawal *et al.*, 2008)
- To promote pedestrian choice of safe routes, travel time should be considered and decreased so far as practicable – ideally the quickest routes should be the safest, and vice versa.
(A. Avenoso and J. Beckmann, 2005)

Wayfinding

- Older people appear to have specific problems with learning and sequencing route information – they are less able to learn a new route and report difficulties wayfinding. Therefore, apparatus to assist in general wayfinding along safe routes may have implied benefits for this pedestrian group.
(G. Dunbar *et al.*, 2004)

How effective?

Almost all substantiated safe route planning interventions relate to children and education around safe crossing behaviour.

- Educational training increases skills relating to identifying safe places to cross. *Kerbcraft* pilot projects in England and Scotland targeted 5 to 7 year old children using roadside sessions. Statistically significant behavioural improvements were found.
(K. Whelan *et al.*, 2008)
- A study showed significant improvements in safe route planning once 5 to 8 year olds had been ‘coached’ by their parents, who were in receipt of a free booklet on child road safety.
(S. Wood *et al.*, 2003)
- Safe place training may be delivered by computer in classroom sessions. This was found to double the number of safe judgements made by 8 to 10 year olds in the roadside environment.
- However, computer based training had little effect on the younger age group (six year olds) who were also studied.
(DfT, 2002)

- Having parents administer training to children in small groups has proved effective, and is thought to be a cost effective option.
- Classroom or computer administered training for children can realise similar improvements to practical roadside training.

(J. Thomson, 1997)

Gaps in the research

- There is poor understanding of the interventions associated with the Safe Routes To School programme and their effect in the field. Few studies have actually evidenced the benefits of these casualty reduction measures. Hence many of the safety benefits remain anecdotal or anticipated rather than proven.
- Safe Routes to Schools are applied locally, in response to local environmental factors. However, there is poor understanding of the benefits of a particular blend of safety measures, i.e. whether certain safety measures are more effective used together or distinctly.

(E. Dumbaugh and L. Frank, 2007)

Safe route planning interventions tend to be focussed in two specific areas: educating children regarding safe routes across the road, and adult wayfinding with a primary objective of mobility. There appears to be a gap in the research relating to adult pedestrians and selecting safe routes.

Where wayfinding has been implemented it would be beneficial to run a long term spatial RTI study to discover how the relationship of pedestrian RTIs is affected by wayfinding provision.

Much of the work around safe route planning is focussed on urban or suburban areas. There is a gap in the knowledge surrounding safe route planning provision and behaviour in rural areas where infrastructure and destinations are fundamentally different.

The main challenge of safe route planning is linking causation to casualty figures. This in turn makes it difficult to analyse the effectiveness of interventions. A local approach may be the most effective starting point in building robust statistical links and appreciating what works.

References

Department for Transport research and statistics

Title: Reported road casualties Great Britain: 2010 annual report
Author / organisation: P. Kilbey, D. Wilson, W. Huang, P. McEvoy, and A. Bhagat
Date: September 2011 Format: Pdf
Link: http://assets.dft.gov.uk/statistics/releases/road-accidents-and-safety-annual-report-2010/rrcgb2010-complete.pdf
Free / priced: Free
Objectives: This report delivers statistics relating to all road RTIs reported to the police in Great Britain in 2010.
Methodology: Statistics are compiled from the STATS19 database of road traffic RTIs.
Key Findings: <ul style="list-style-type: none">• In 16 per cent of RTIs involving pedestrian casualties, the pedestrian had <i>pedestrian crossing road masked by stationary or parked vehicles</i> reported as a contributory factor.• In 6 per cent of RTIs involving pedestrian casualties, the pedestrians had <i>wrong use of pedestrian crossing facility by pedestrian</i> as a contributory factor.
Themes: RTI statistics, pedestrian contributory factors
Comments: The national road casualty statistics remain the single largest source of RTI data. It includes contributory factors, which give an indication of the role that safe routes for pedestrians might play.

Title: Reported Road Casualties Great Britain: 2013 annual report
Author / organisation: Department for Transport
Date: September 2014
Format: Pdf
Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/359311/rrcgb-2013.pdf
Free / priced: Free
Objectives: This report delivers statistics relating to all road RTIs reported to the police in Great Britain in 2013.
Methodology: Statistics are compiled from the STATS19 database of road traffic RTIs.
Key findings: <ul style="list-style-type: none">• In 14 per cent of RTIs involving pedestrian casualties, the pedestrian had <i>pedestrian crossing road masked by stationary or parked vehicles</i> reported as a contributory factor.• In 6 per cent of RTIs involving pedestrian casualties, the pedestrians had <i>wrong use of pedestrian crossing facility by pedestrian</i> as a contributory factor.
Themes: RTI statistics, pedestrian contributory factors
Comments: The national road casualty statistics remain the single largest source of RTI data. It includes contributory factors, which give an indication of the role that safe routes for pedestrians might play.

Title: Reported Road Casualties Great Britain: 2014 annual report
Author / organisation: Department for Transport Date: September 2015 Format: Pdf Link: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/463797/rrcgb-2014.pdf
Free / priced: Free
Objectives: This report delivers statistics relating to all road RTIs reported to the police in Great Britain in 2014.
Methodology: Statistics are compiled from the STATS19 database of road traffic RTIs.
Key Findings: In 2014 in Great Britain: <ul style="list-style-type: none"> • 14% of RTIs involving pedestrian casualties had pedestrian crossing road masked by stationary or parked vehicles reported as a contributory factor. • 6% of RTIs involving pedestrian casualties had wrong use of pedestrian crossing facility by pedestrian as a contributory factor.
Themes: RTI statistics, pedestrian contributory factors
Comments: The national road casualty statistics remain the single largest source of RTI data. It includes contributory factors, which give an indication of the role that safe routes for pedestrians might play.

Title: Delivery of local road safety
Author / organisation: Aecom Date: September 2011 Format: Pdf http://webarchive.nationalarchives.gov.uk/20121105134522/http://www.dft.gov.uk/publications/rsrr-124/
Free / priced: Free
Objectives: An evaluation of local road safety in Great Britain: to evaluate the different plans and strategies; to assess what is being delivered and to identify and share areas of best practice.
Methodology: Based on the Theory of Change the assessors considered what has changed, why, and the wider context.
Key Findings: <ul style="list-style-type: none"> • There has been a move from cluster-based investment towards route-based investment, often integrating risk-based assessments for targeted or vulnerable road user groups. • Route based assessments are successfully using route based approaches to identify the nature, extent and scope of road safety problems. • It is more difficult to measure outturn benefits (at least in the short term) for route based interventions.
Themes: route based intervention, risk based analysis, vulnerable user groups
Comments: A high level evaluation, but offers a good overview and endorsement of a route-based approach to road safety interventions.

Title: Evaluation of the national child pedestrian training pilot projects
Author / organisation: K. Whelan, E. Towner, G. Errington and J. Powell
Date: March 2008 Format: Pdf
Link: http://assets.dft.gov.uk/publications/national-network-of-child-pedestrian-training/82-main-report.pdf
Free / priced: free
Objectives: To establish the impact of the National child pedestrian training pilot projects ('Kerbcraft') on children's road safety. To identify the most successful schemes and elements of schemes.
Methodology: Before and after safety assessments of trained children and control groups; consultation with stakeholders who administer the programme. The intervention itself is based on education – classroom training and some site visits.
Key Findings: <ul style="list-style-type: none"> • The programme developed a package of skills, of which the first – recognising safe vs. dangerous places to cross – is the most relevant to this synthesis. • The study showed a statistically significant increase in ability to construct safe routes amongst the trained children. • Securing on-going funding for the initiatives has presented a challenge; as a result implementation has tended to be scaled back post-pilot.
Themes: child pedestrian, education, safe places to cross
Comments: The study appears to be in depth and claims of improved behaviour are statistically significant. This work does not attempt to link the pilot schemes to local casualty trends.

Title: The role of skills, attitudes and perceived behavioural control in the pedestrian decision making of adolescents aged 11 – 15 years
Author / organisation: A. Tolmie, J. Thomson, R. O’Conno, H. Foot, E. Karagiannidou, M. Banks, C. O’Donnell and P. Sarvary Date: October 2006 Format: Pdf Link: http://dera.ioe.ac.uk/9710/1/pedestriandecisionmaking.Pdf Free / priced: Free
Objectives: To investigate the peak in pedestrian RTIs occurring to young adolescents. Safe route planning is incorporated as one component of a study to identify whether the target group have the skills to deal with complex traffic environments.
Methodology: In assessing safe route planning, bespoke computer assessments and accompanied site visits were used. Groups were selected by age and both adults and primary-aged children carried out the same assessments to form comparison groups.
Key Findings: <ul style="list-style-type: none"> • Results showed a gradual increase with age of incidence of safe routes, as well as a reduction in variability of results. The significance of age was significant, but not a strong trend in safe route planning for adolescents. • Adolescents typically under-estimated task difficulty compared to primary and adult groups, and failed to attend to feedback. This was most evident in 13 – 15 year olds, suggesting problems were more acute some time after the transition to secondary school. Again, the trends were not entirely consistent or conclusive.
Themes: adolescents, behaviour, skills, feedback
Comments: Safe route planning is only a small part of this study, but the work does give an indication of how behaviours and skills develop with age.

Title: Older pedestrians: a critical review of the literature
Author / organisation: G. Dunbar, C. Holland and E. Maylor Date: June 2004 Format: Pdf Link: http://webarchive.nationalarchives.gov.uk/+http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/olderpedestriansacriticalrev.Pdf
Free / priced: Free
Objectives: To provide a critical review of research on older pedestrians and road safety; to identify groups within the older population who are most at risk, and to identify best practice interventions.
Methodology: A literature review on older pedestrians, also incorporating other older road users (e.g. drivers) where relevant.
Key Findings: <ul style="list-style-type: none"> • Older people appear to have specific problems with learning and sequencing route information – they are less able to learn a new route and report difficulties wayfinding. • Absolute separation of vehicles and pedestrians to prevent conflicts may in turn present difficulties to older or mobility impaired pedestrians. Older pedestrians may not be persuaded to use footbridges for example. • Accommodating signal timing and uniformity of crossing facilities along routes commonly used by older pedestrians would be likely to reduce conflicts.
Themes: older pedestrians, route planning, wayfinding
Comments: A comprehensive literature review, some elements cover the role of safe routes.

Title: Bringing children into the social contract of road use
Author / organisation: S. Wood, S. Thornton, E. Arundell and L. Graupner (Department for Transport)
Date: April 2003
Format: Pdf
Link: http://webarchive.nationalarchives.gov.uk/20100203035403/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/bringingchildrenintothesocia.Pdf
Free / priced: Free
Objectives: To develop and then evaluate the effectiveness of a booklet for parents, which aimed to help them to improve their children's road safety.
Methodology: In-situ pilot studies were carried out before and after with a control group included. A safety booklet was produced and large scale surveys were made of recipients to look for evidence of improvements.
Key Findings: <ul style="list-style-type: none"> • Children aged 5 to 8 were consistently better at selecting when to cross, than selecting where to cross. Planning a route and understanding dangerous crossings were less well understood. • Performance across all aspects of the study (including planning a route) improved for children in the after study. Improvements were most significant in the youngest children. • Administration of road safety advice via parents was therefore seen to positively influence the safety of children, including route planning tasks. Parents were typically highly supportive of the approach.
Themes: children, behaviour, social interaction, parental advice
Comments: A study notable for the social method of intervention, which utilises parents to instil and exhibit good behaviours.

Title: Computer-based pedestrian training resource
Author / organisation: Department for Transport Date: August 2002 Format: html [online only] Link: http://webarchive.nationalarchives.gov.uk/20100202152501/http://www.dft.gov.uk/pgr/roadsafety/research/rsrr/theme1/computerbasedpedestriantrain4737
Free / priced: Free
Objectives: To produce computer based training materials for children – safe place finding being one of four key skills. The project sought to prove the validity (or otherwise) of computer training in the roadside environment, as well as successfully educating participants.
Methodology: Derivation of computer modules, then applying them to children aged from 5 to 10 as classroom sessions. Testing was carried out at the roadside to see how well lessons translated to the external environment, and a control group were used.
Key Findings: <ul style="list-style-type: none"> • Following safe place finding training, the number of safe judgements made by seven to eight year olds and nine to ten year olds doubled. Results improved further in the delayed post-training test, which suggests cumulative benefit. • However training had little effect on five to six year olds, suggesting that younger children were less able to translate learning from the classroom to the roadside.
Themes: safe place finding, children, classroom training
Comments: The study appears to be robust and shows that, for older children at least, a well designed classroom session can translate to improved road crossing behaviour.

Other works

Title: You are here: A guide to developing pedestrian wayfinding
Author / organisation: Department of Transport, Victoria (Australia)
Date: 2011
Format: Pdf
Link: http://www.transport.vic.gov.au/_data/assets/Pdf_file/0004/46570/PedestrianWayfindingGuide.Pdf
Free / priced: Free
Objectives: To provide guidance for councils to promote effective use of signage.
Methodology: Compilation of case studies and best practice.
Key Findings: <ul style="list-style-type: none">• The guide provides an overview of holistic considerations in wayfinding, including selection of safe pedestrian routes.
Themes: safe routes, wayfinding, children
Comments: An overview of contemporary guidance on wayfinding, of which safe route planning is a component.

Title: Roadways (Safer route planning)
Author / organisation: Road Safety Scotland
Date: 2010
Format: Pdf
Link: http://www.roadsafetyscotland.org.uk/sites/default/files/resource_downloads/B51160%20S3%20Safer%20Route%20Planning_tcm4-505522.pdf
Free / priced: Free
Objectives: To increase road safety through a series of exercises and activities. <i>Roadways</i> is a resource pack for youth leaders.
Methodology: The resource packs were produced in association with youth groups and Road Safety Officers.
Key Findings: -
Themes: youth, safe routes, education, activities
Comments: A contemporary safe route planning learning resource – no results stated.

Title: The play strategy
Author / organisation: Department for Children, Schools and Families, and Department for Culture, Media and Sport
Date: 2008 Format: Pdf
Link: http://www.playengland.org.uk/media/120447/play-strategy-summary.pdf
Free / priced: Free
Objectives: To establish a strategy to deliver significantly improved play spaces for children.
Methodology: Government consultation, followed by a summary study.
Key Findings: <ul style="list-style-type: none"> • Road safety was a major concern for those consulted – safe routes to play spaces are of central importance to realise benefits. • Local authorities are charged with developing these safe routes.
Themes: safe routes, children, play spaces
Comments: Inclusion of safe routes shows the importance with which they are now held in planning and constructing for young people.

Title: Evaluation of the safety benefits of legacy safe routes to school programs
Author / organisation: R. Blomberg, A. Cleven, F. Thomas III and R. Peck (NHTSA)
Date: August 2008 Format: Pdf
Link: http://www.nhtsa.gov/DOT/NHTSA/Traffic%20Injury%20Control/Articles/Associated%20Files811013.Pdf
Free / priced: Free
Objectives: To investigate a RTI-based evaluation of the Safe Routes To School (SRTS) programme, and to determine if such an evaluation is feasible to examine the safety effects of the legacy SRTS program. This would allow some investigation to disprove the hypothesis that increased walking and cycling exposure due to SRTS would increase casualties.
Methodology: Data collation and use of RTI databases from the State Data System. Standardisation against equivalent population sub-groups was applied.
Key Findings: <ul style="list-style-type: none"> • SRTS programmes were heterogeneous; however the common primary goal was actually to increase non-motorised mobility rather than to increase safety (less than one third of schemes were motivated primarily by safety concerns). • No evidence was found to suggest that SRTS increased casualties; the programme was at least benign in that respect. However, insufficient data exists to reliably credit SRTS with a reduction in casualties.
Themes: safe routes, schools, RTIs, programmes
Comments: Although SRTS did not set out in many cases to improve safety, this study shows that its application in North America, although varying almost case by case, has not increased associated RTIs. Note that the data covers both pedestrians and cyclists on SRTS.

<p>Title: How far, by which route and why? A spatial analysis of pedestrian preference Journal of Urban Design, Vol. 13. No. 1, 81-98</p>
<p>Author / organisation: A. Agrawal, M. Schlossberg and K. Irvin Date: February 2008 Format: Pdf Link: http://transweb.sjsu.edu/mtportal/research/publications/summary/0606.html</p>
<p>Free / priced: Free</p>
<p>Objectives: To better understand trip lengths and route choices of American pedestrians.</p>
<p>Methodology: Surveys carried out of 328 commuters who walked to rail stations in California and Oregon.</p>
<p>Key Findings:</p> <ul style="list-style-type: none"> • By far the most important factor in route choice was the shortest, fastest (or most convenient) route. • When asked an open-ended question, safety was the second most common response (mentioned by 28 per cent of respondents) in determining route choice. The results have been further examined to find that respondents typically do mean road safety – seeking low traffic volumes or avoiding busy intersections. Relatively few mentioned safety in the context of (fear of) crime. • Although only 8 per cent of people had safety as their first item on the list, it was the second item in 14 per cent of responses. • When presented with a closed ranking question, safety was considerably more important to respondents – having traffic devices present (85 per cent) and having traffic moving at safe speeds (87 per cent) were very or somewhat important to respondents.
<p>Themes: route choices, safety, survey, commuters</p>
<p>Comments: A relatively small study, focussing on adult commuters (time bound since they were destined to catch a train) – safety still rates as the next most important concern in route choice following shortest / quickest. There is an implication that safety provision therefore does influence route selection.</p>

<p>Title: Traffic safety and safe routes to schools Synthesising the empirical evidence Transportation Research Record: Journal of the Transportation Research Board</p>
<p>Author / organisation: E. Dumbaugh and L. Frank Date: 2007 Format: Pdf Link: http://dx.doi.org/10.3141/2009-12 Free / priced: Free</p>
<p>Objectives: To summarise what is known about the substantive safety effects of safety measures which comprise the Safe Routes To School (SRTS) programme. To identify areas where knowledge gaps exist.</p>
<p>Methodology: Review of substantive research concerning countermeasures associated with the SRTS programme, specifically: sidewalks, bicycle lanes, speed-reducing / traffic calming measures, crosswalks, medians / refuges, active police enforcement, school zone flashers, crossing guards, child education programme, and motorists education programme.</p>
<p>Key Findings:</p> <ul style="list-style-type: none"> • Despite potential benefits of the SRTS countermeasures, most of these are presumed rather than known. • Of those applications with substantive studies, unsignalised crosswalks and motorist education programmes were actually found to have no effect on the incidence of RTIs. • None of the countermeasures have been assessed specifically to consider child pedestrians. • These countermeasures are combined in a programme of applications so the cumulative effect may be greater than the sum of the parts.
<p>Themes: safe routes, schools, RTIs, programmes, children</p>
<p>Comments: This study shows that, in spite of strong anecdotal evidence in support of SRTS as a safety-enhancing programme, very little has been fully researched and understood. There exist gaps around specific countermeasures, and very limited understanding of the effect of combining countermeasures into programmes.</p>

Title: The influences of demographics and individual differences on children's selection of risky pedestrian routes
Author / organisation: B. Barton and D. Schwebel (Journal of Pediatric Psychology) Date: June 2006 Format: Pdf Link: http://jpepsy.oxfordjournals.org/content/32/3/343.short Free / priced: Free
Objectives: To determine the roles of age, gender, ethnicity, family income and inhibitory control on children's selection of safe pedestrian routes.
Methodology: The study measured 122 children for inhibitory control and pedestrian route matching. Gender, age, ethnicity and household income were noted.
Key Findings: <ul style="list-style-type: none"> • Younger age, ethnic minority status, lower family income and lower temperamental inhibitory control predicted selection of riskier routes. • Neither gender nor child- or parent-reported temperament was significantly related to route selection. • Poorer safe route selection of lower income and ethnic minority children may be indicative of environmental factors which reduce street crossing experience; i.e. it seems unlikely that low income or ethnic minority status is in itself a cause of poor route selection. • Although gender is typically correlated with road safety, this study did not find a correlation with route selection. It is likely therefore that differences arise from street crossing behaviour – girls are more likely to engage in better stop and look behaviour before crossing. • The study found that some measures of temperament were strong predictors where others offered poor correlation. This is likely due to the inherent difficulties in measuring temperament, and that some measures tapped behaviours more relevant to route construction.
Themes: safe route selection, demographics, temperament, children
Comments: This study provides useful pointers to those wishing to target training to sub-groups of children at greater risk. Limitations of the study include uncertainty around transference of laboratory results to real road crossing behaviour; and that the sample contained a spread of incomes, but that these were still above average.

Title: Factors influencing pedestrian safety: a literature review (PPR 241)
Author / organisation: A. Martin (Transport Research Laboratory)
Date: February 2006
Format: Pdf
Link: http://www.tfl.gov.uk/assets/downloads/Factors-Influencing-pedestrian-safety-literature-review.Pdf
Free / priced: Free
Objectives: A report for Transport for London to ascertain ways in which pedestrian behaviour may be influenced to reduce casualties in London.
Methodology: Literature review.
Key Findings: <ul style="list-style-type: none"> • No simple universal solutions exist that are suited to London's high levels of vehicle and pedestrian traffic. • Enforcement measures are best applied on strategic routes where traffic calming can also reduce capacity. • Education is best targeted at a particular behaviour or a particular group.
Themes: pedestrian safety, engineering, enforcement, education
Comments: Although targeted specifically at London, this a comprehensive review of literature which collects effective interventions.

Title: The safety of vulnerable road users in the southern, eastern and central European countries
Author / organisation: A. Avenoso and J. Beckmann (ETSC)
Date: 2005
Format: Pdf
Link: http://ec.europa.eu/transport/roadsafety_library/publications/sec-safetybelt_safety_vulnerable_road_users.Pdf
Free / priced: Free
Objectives: A policy paper outlining recommendations for vulnerable road users in EU countries with below average road safety records.
Methodology: Collection of research worked into topics and road safety policy recommendations.
Key Findings: <p>Recommendations pertinent to safe route planning include:</p> <ul style="list-style-type: none"> • Local authorities should provide shorter and safer routes for pedestrians and cyclists by ensuring that trips are short and routes direct and that the quickest routes are also the safest. • In order to promote safer route choice, travel time should be increased on unsafe, undesired routes and decreased on safe, desired routes. • Safe routes to school -type schemes should be developed in order to increase the safety of children.
Themes: safe routes, travel time
Comments: No primary findings but a recent policy paper demonstrating the role that safe route planning should have in improving road safety.

Title: Developing safe route planning strategies in young child pedestrians
Author / organisation: J. Thomson (University of Strathclyde) Date: 1997 Format: Pdf Link: http://strathprints.strath.ac.uk/18660/1/strathprints018660.Pdf Free / priced: Free
Objectives: To assess two action-based methods for improving road safety judgements relating to safe crossing points.
Methodology: Two programmes of equivalent training were devised – one delivered individually in the classroom and one individually at the roadside. Before and after tests were carried out and a control group used.
Key Findings: <ul style="list-style-type: none"> • In devising the schemes, younger (aged 5 to 7) children’s judgement was seen to be overly affected by the presence, however distant, of cars – typically they don’t cross if they see cars. • However, they also typically failed to recognise the hazards of poor sight lines associated with obstructions, brow of a hill etc. This results in limited ability to construct safe routes for 5 to 7 year olds. • Following training, the performance of 5 year olds post-test improved almost to the level of 11 year olds. Gains made in both the classroom and practical training gave broadly similar improvements. • Performance reduced over time in the test two months after training, and again in the test 8 months after training. However, capability at 8 months post test was still significantly higher than pre-training. Again, trends were very similar for classroom and practical training groups. • Administering the same training in groups of five showed improvements over the control group, though by a factor of roughly half that achieved from individual training. However, group trained children showed no deterioration when tested two months later. • Having parents administer training to groups of three children with a blend of classroom based and practical sessions yielded similar post-test improvements to the other delivery methods.
Themes: safe routes, programme administration, children
Comments: This article provides only a brief summary, but shows the successes possible when the youngest children (i.e. those least adept at safe route planning) are given some road safety training. There is also useful discussion of training administration.

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