Synthesis title:

Road Safety Management and Partnerships

Other Relevant Topics:

▶ Perceptions of Road Safety (Other)

▶ Laws & Regulations (Compliance and the Law)

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

- While central government sets the regulatory framework for roads, vehicles and road users, and national road safety strategies, road safety delivery occurs primarily at the local level with local government being the lead delivery agent, working in partnership with many other agencies and stakeholders.

- Good road safety management adopts the Safe System Approach advocated by the World Health Organisation. The safe system approach recognises that people make mistakes, and designs roads and vehicles to minimise the risk of crashes occurring, and to ensure that when they do occur, they are much less likely to result in death or serious injury. The Safe Systems Approach ensures that measures to prevent injuries extend beyond trying to change individual behaviour, and include changing vehicles, roads and vehicle speeds.

  (AIRSO et al, 2015)

- The Safe System Model or Vision Zero approaches to road safety are valuable, but need to be integrated with a common vision for a sustainable transport system developed in conjunction with energy, transport, health, environment, and education agencies.

- Two overarching themes emerging from the research include the importance of leadership for policy change and implementation, and addressing the more transformative aspects of intervening in a system.

  (May et al, 2011)

- Road safety efforts must be evidence-based, fully costed, properly resourced and sustainable.

  (Peden et al, 2004)

- Partnerships are needed because road traffic incidents (RTIs) do not have a single cause and no single organisation or sector can solve the global road safety challenge.

  (Global Road Safety Partnership, 2011)

Summary

- Responsibility for road safety lies with both the Department for Transport (DfT) and local authorities. In 2011 the DfT's Strategic Framework for Road Safety outlined a framework for road safety and how interventions to reduce road traffic incidents (RTIs) would be put in place at a national and local level.

- The 3 E's approach (Engineering, Education and Enforcement) to road safety is well known but research suggests that a Safe System approach which encompasses a number of additional factors including energy, transport, health, deprivation and environment is seen to be more beneficial.

- It is also well known that road safety interventions should be based on accurate evidence, adequately financed, resourced and have long lasting impacts. Such interventions also require monitoring and evaluation over time.

- Before interventions are put in place it is important to have a strong base of institutional management functions. If interventions are built on these functions then positive results can follow.

- Partnership working has a positive impact on road safety as it brings together a number of different organisations which could not make such an impact alone. Road safety partnerships are often made up of organisations such as the police, fire services, charities, local authorities and the NHS amongst others. Effective communication between partners is vital to ensure that partnership has an effect on reducing RTIs.

- In recent times funding has been reduced for road safety partnerships, although many involved are still proactive some organisations have had to pull away to focus on their own organisation's responsibilities.

Methodology

This synthesis was compiled during November – December 2012, and revised in March 2013. The synthesis was further revised in November-December 2015.

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 and various project archives. Search terms used to identify relevant papers included but were not limited to:
  - o 'Road safety management';
  - o 'Road safety';
  - o 'Partnerships';
  - o 'Road safety partnerships';
  - o 'Police';
  - o 'Public health';
  - o 'NHS';
  - o 'Local authorities'; and,
  - o 'Fire service'.
  A total of 37 pieces of potentially relevant research were identified.

- **Initial review of research** – primarily involved sorting the research items based on key criteria, to ensure the most relevant and effective items went forward for inclusion in this synthesis. Key criteria included:
  - o Relevance – whether the research makes a valuable contribution to this synthesis.
  - o Provenance – whether the research is relevant to drivers, road safety policies or road safety professionals in the UK. If the research did not originate in the UK the author and expert reviewer have applied a sense check to ensure that findings are potentially relevant and transferable to the UK.
  - o Age – Priority is given to the most up to date titles in the event of over-lap or contradiction.
  - o Effectiveness – whether the research credibly proves (or disproves) the effectiveness of particular road safety management interventions and partnerships.
  Following the initial review, 19 pieces of research were taken forward to form the basis for this synthesis, 10 of which were published in the UK, 4 were published in the rest of Europe and 5 from the rest of the world.

- **Detailed review of research** – key facts, figures and findings were extracted from the identified research to highlight pertinent 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 conducted in a time bound manner.

- **Review** – the draft synthesis was subjected to extensive review by a subject matter expert, proof reader and an independent Evidence Review Panel.

Road safety management is defined as a framework for enabling legislation, policy and guidance, which supports positive delivery of national and local initiatives and interventions for improving road safety.

A partnership can be defined as an arrangement where various organisations work together towards a common goal. In the context of road safety the aim is to reduce road deaths and injuries.

Road safety management is a complex and all embracing topic which involves many organisations. Many of these organisations such as the Directorate-General for Mobility and Transport (DG MOVE), the World Health Organisation (WHO) and the European Transport Safety council (ETSC) provide guidance. Some of these organisations' guidance will be referenced in this document.

Key statistics

No specific key statistics were identified during the production of this research synthesis which defined the 'road safety issue' beyond those figures generally available in the annual Road Casualties Great Britain reports published by the Department for Transport.

Research findings

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

The evolution of road safety management

Road safety management has evolved over time with a definite shift in focus from driver interventions to a wider view of interventions that form a safe system.

As outlined by the WHO and the World Bank, progressive shifts in road safety management thinking and practices in high-income countries have been evident. Since the 1950s there have been four significant phases of development, which have become progressively more ambitious in terms of the results desired:
- Phase 1 - Focus on driver interventions (1950's and 1960's).
- Phase 2 - Focus on system-wide interventions (1970's and 1980's)
- Phase 3 - Focus on system-wide interventions, targeted results and institutional leadership.
- Phase 4 - Focus on system-wide interventions, long-term elimination of deaths and serious injuries and shared responsibility.

Road safety management can be viewed as a pyramid. The base of the pyramid is a set of institutional management functions, interventions are built on top of this base, and results are built on top of interventions.

- The latest evolution of the road safety management system which is recommended for use by the World Bank and the OECD is a pyramid. Safety is produced just like other goods and services and the production process is viewed as a management system with three levels: institutional management functions which produce interventions, which in turn produce results.

(Safety Net, 2009)

The three levels of the road safety management system pyramid are detailed below:

- Institutional management functions: The seven identified institutional management functions are the foundation on which road safety management systems are built. They are essential for the production of interventions which, in turn, achieve road safety results and for this reason they must receive the highest priority in road safety planning and policy initiatives. The institutional management functions relate to all government, civil society and business entities that produce interventions and ultimately results.

(Safety Net, 2009)

The institutional management functions are discussed in more detail in BS ISO 39001:2012.

- Interventions: Broadly, these comprise system-wide strategies and programmes of interventions to address safety targets. Interventions cover the planning, design and operation of the road network, the entry and exit of vehicles, and users into the road network, and the recovery and rehabilitation of RTI victims. They seek to manage exposure to the risk of RTIs, prevent RTIs, and reduce RTI injury severity and the consequences of RTI injury. They comprise safety designs, standards, and rules, as well as a combination of activity to secure compliance with these such as information, publicity, enforcement and incentive.
- Results: In good practice management systems road safety results are expressed in the form of long term goals and interim quantitative targets. Targets specify the desired safety performance endorsed by governments at all levels, stakeholders and the community. To be credible, interim targets must be achievable with cost-effective interventions. Targets are usually set in terms of final outcomes. They can also include intermediate outcomes consistent with their achievement, and institutional output measures required to achieve the intermediate results.
- The road safety management system has a number of generic characteristics that allow for its universal application to all countries, irrespective of their development status or road safety performance.

(Safety Net, 2009)

Institutional management functions

The institutional management functions will be discussed in more detail in the following sections. This section will outline who is responsible for road safety management and how it is coordinated.

Results focus

This function focuses on the ambition and accountability that directs interventions and results.

Accountability

At a national level the government (the Department for Transport and its agencies) and other stakeholders are responsible for road safety management. At a local level, local authorities and other stakeholders are responsible for road safety management.

- Central Government's main responsibilities in the road safety framework are to:
    - Provide leadership nationally.
    - Set the legal and regulatory framework for road safety.
    - Negotiate, agree and implement international (including European Union) standards, including for vehicles.
    - Manage the strategic road network.
    - Set national standards for safe and responsible driving, and provide national services, such as driving tests, licensing and vehicle checks.
    - Provide public information and educational materials, such as the Highway Code.
    - Undertake and share research, good practice and data with professionals, local bodies and the public.
- The Strategic Framework for Road Safety sets out the strategic framework for road safety and the package of policies that the DfT believe will continue to reduce deaths and injuries on our roads. The policies are split between measures that the DfT intend to take nationally and areas where the policy and delivery will reflect local priorities and circumstances.

(DfT, 2011)

- While central government sets the regulatory framework for roads, vehicles and road users, and national road safety strategies, road safety delivery occurs primarily at the local level with local government being the lead delivery agent, working in partnership with many other agencies and stakeholders.

(AIRSO et al, 2015)

- The Road Traffic Act 1988 placed a duty on local highway authorities to prepare and carry out a programme of measures designed to promote road safety. This includes studying the occurrence of RTIs, taking preventative measures and reducing the possibility of casualties on new roads (i.e. RTI investigation, prevention and safety audit). During the last twenty years these measures have contributed to the large reductions in deaths and serious injuries on Britain's roads, with for example a recent year's worth of local highways road safety engineering resulting in fifty deaths a year being prevented.
- Local authorities are gaining a greater role in achieving public health outcomes, with road safety being one of these.
- Other local public services, including the health service and the three emergency services are influential in improving road safety and also have statutory responsibilities.

(DfT, 2011)

The European Union also has a role to play in guiding and supporting Member States in the creation and implementation of road safety policies.

- In July 2015, the European Commission recognises that the EU is the safest region world-wide but also acknowledged that the EU is no longer on track to achieve the 2020 target.
- The European Commission therefore made a number of key recommendations, including:
  - Adopt a target to reduce by 35 per cent between 2014 and 2020 the number of people seriously injured.
  - Install barriers friendly to two-wheelers in areas susceptible to motorcycle collisions.
  - Encourage that, within urban transport planning, a clear hierarchy of transport users is adopted, with pedestrians and cyclists at the top of the hierarchy.
  - Strengthen the Cross Border Enforcement Directive within the context of the revision in 2016 by ensuring greater convergence in enforcement of road safety related traffic rules and developing common minimum standards for enforcement.
  - EU funds should concentrate on the improvement of road safety through the application of known, effective, science based countermeasures targeting the most life-saving actions.
- The European Commission also made some enforcement recommendations to Member States, including:
  - The preparation of enforcement plans with yearly targets for enforcement and compliance in the areas of speeding, drink and drug driving and seatbelt use.
  - The adoption of a 'zero tolerance' approach to enforcing the three priority areas of road safety legislation.
  - Ensuring greater convergence in enforcement of road safety related road traffic rules and the development of common minimum standards.

(ETSC, 2015a, 2015b)

Ambition

Ambition in reducing casualties is highlighted by quantifiable targets that are set at a national and local level.

- For a road safety strategy to be successful, it is generally believed that realistic quantified road safety targets should be set.
- A quantified road safety target is a number or index that is set by a national or local government to reduce the number of people who are killed or injured in road traffic RTIs.
- The role of road safety targets in achieving the safer use of roads is to provide a basis for motivating and monitoring actions to reduce death and injury in road traffic RTIs.
- As a key component of road safety strategies, road safety targets need to be quantitative and measurable so that it can be ascertained whether the target has been achieved, and if it has not been achieved, then the extent to which the result is short of the target.

- Quantified road safety targets have been set in a number of countries in recent decades. Most countries in Europe (such as Finland, France, The Netherlands, Sweden, and the United Kingdom) and some countries in other parts of the world (including Australia, New Zealand, and the United States) have set quantified targets for the improvement of road safety at some point, and have subsequently developed specific programs to realise these targets.
- There is, however, little research on the evaluation of the association between the setting of road safety targets and the reduction of traffic RTIs and casualties. Although a quantified road safety target may not have a direct effect on the number of fatalities, it may serve as an effective catalyst that motivates policy makers and stakeholders to support road safety programs that are developed to meet the target.
- The majority of countries with quantified road safety targets experienced a reduction in road fatalities during the period of the targets. The results showed that the overall reduction in road fatalities was significant after the setting of quantified road safety targets.
- It is envisaged that the setting of quantified road safety targets helps to raise concern about road safety in societies, encourages decision-makers to formulate effective road safety strategies, and ensures that sufficient resources are allocated to road safety programs.
- Overall, the establishment of quantified road safety targets is found to have an appreciable association with an improvement in road safety.
- A more comprehensive and in depth study on other relevant factors, such as level of education, driving age, driver training, and national income, along with other essential components that should be taken into account in the setting of effective road safety targets, such as vision, objectives, action plan, evaluation and monitoring, research and development, quantitative modelling, institutional framework, and funding, is necessary in the future.

(Wong et al, 2006)

A specific road safety policy, with a clear ambition is the 'Vision Zero' approach.
- The decision by the Swedish Parliament to adopt Vision Zero as Sweden's road safety policy was a radical innovation.
- The policy is different from traditional traffic safety policy with regard to policy formulation, its view on responsibility, its requirement for the safety of road users, and the ultimate objective of road safety work.
- Vision Zero entails a shift in the road safety planning paradigm. Instead of posing the question 'What can be done?' the question is 'What must be done in order to create a safe road transport system?'

(Belin et al., 2012)

Coordination

This function focuses on the coordination and arrangement of interventions across a range of organisations and includes partnership working.

Partnership working
Partnerships enable various organisations to work together towards a common goal. In the context of road safety the ultimate goal is to reduce KSI RTIs.

- The focus for partnership working was once almost solely on improving outcomes, but the assessment of efficiencies and ensuring value for money has become increasingly evident. This shift towards increasing productivity is changing the nature and extent of partnership working, including greater emphasis on:
    - Shared services and joint strategic commissioning;
    - A 'whole area' approach to managing budgets; and,
    - New models for service delivery.
- Local Government Improvement and Development identified the following overarching findings relating to future partnership working within local authorities:
    - The commitment to partnership working remains strong in the majority of authorities;
    - Partners are focusing on reviewing strategic objectives, leading to key principles for future collaboration; and
    - Partner organisations are seeking ways to pool and align resources to deliver more efficient and effective investment.
- Partnerships are observed as a central strand of local authority working. The following are further examples of good practice partnership working:
    - Establishing common objectives and aims can enhance partnership formation and direction – this can also avoid duplication and contribute to economy of resources;
    - The secondment of partner staff into local authority teams can enhance joint working, providing a better appreciation of delivery pressures and processes – fire and rescue officers have exemplified this, enhancing integration;
    - Local authorities, the police and ambulance services collaborated on a regional publicity campaign, using photographs of trauma victims to enhance the underlying message;
    - The presence of national targets, and supporting local level targets, have been important stimuli to local partnership working; and,
    - Regional and sub-regional partnerships have been evident, and have been effective for Education, Training and Publicity (ETP) activities – the pooling of resources across authorities and partners can generate cost savings for publicity campaigns.

(AECOM, 2011)

Benefits of partnerships

- Road Safety Partnerships have helped create better road safety outcomes by integrating Education, Engineering and Enforcement through collaborative working.

  (Christie and Buckle, 2012)

- Partnerships are needed because RTIs do not have a single cause and no single organisation or sector can solve the global road safety challenge. (Global Road Safety Partnership, 2011)

- At the local level, as budgets are reduced, the development of effective partnerships is an essential strategic approach.. It makes it far easier to look at the whole area, the range of policy objectives and the needs and wishes of the community. It enables areas of policy overlap and conflict to be identified, priorities agreed, resources and expertise to be shared and the cost burden to be spread.

- There are many organisations who work with Local Authorities to deliver road safety including the Police, Fire and Rescue Services and Public Health as well as many non-government organisations and private industry stakeholders. It is vital that these links are expanded to include other key members of society such as teachers, medical professionals and religious and community leaders. In many areas of the country these relationships are formalised in a local Road Safety Partnership or Casualty Reduction Partnership.

  (AIRSO et al, 2015)

Organisations involved in partnerships

- The main member organisations involved in road safety partnerships are:
  - Local authority;
  - Health stakeholders;
  - Communities, charities and other stakeholders;
  - Police; and,
  - Fire and rescue service.

    (AECOM, 2011)

- Several of the Road Safety Partnership grant projects demonstrated good partnership with academic establishments and consultants, often in terms of data analysis or improved understanding of the outcomes and outputs.

  (King et al, 2011)

- The four main current partners in delivery for Road Safety Officers appear to be:
  - Schools, colleges and educational establishments;
  - Police and camera safety partnerships;
  - Health boards and local authority health departments; and,
  - Fire and Rescue services.

    (MVA Consultancy, 2009)

Types of partnerships

- Three different levels or types of partnership have been identified, with the majority being established to address primarily road safety issues. Each level has generated benefits in different areas of road safety delivery, including the following:
    - Mini Partnership – defined as the internal collaborative working within local authorities and between divisions and departments. Benefits have included the utilisation of the skills and resources of other teams, including both funding and human resources.
    - Midi Partnerships – defined as the collaboration between local authorities and key organisations within their authority boundary. These derived from the traditional safety camera partnerships, involving the Police, emergency services, etc., to deliver targeted interventions. Examples included a joint local authority and ambulance service leaflet campaign targeting motorcyclists, funded by the former as 'their investment for the future'. Joint schools based delivery between authorities and the fire and rescue service was highlighted as enhancing delivery efficiency and effectiveness.
    - Maxi Partnerships – consisting of regional or sub-regional partnership working between local authorities. Partnerships have been effective in the development and delivery of publicity campaigns to influence cross-border road users (where residence and employment locations are in adjacent authorities) and targeted mode-specific marketing (motorcyclists, for example). Cross-boundary route-based investments have also been assisted through the presence of Maxi Partnerships.

(AECOM, 2011)

The Global Road Safety Partnership (GRSP) is a large road safety partnership that links a number of different countries and organisations across the world.

- The GRSP is a partnership of business, governments and civil society organisations that is dedicated to the sustainable reduction of KSI RTIs in low- and middle-income countries. A hosted project of the International Federation of Red Cross and Red Crescent Societies, based in Geneva, Switzerland, the GRSP vision is a world free of road-RTI death and injury.
- Under the direction of the UN, the Decade of Action for Road Safety offers a common road map for reaching the ambitious goal of reducing road-traffic fatalities globally by 50 per cent. The implementation plan is guided by five key pillars:
    - Better road-safety management;
    - Safer roads;
    - Safer vehicles;
    - Safer road-user behaviour; and,
    - Better post-RTI care.

- Importantly, the GRSP, through its partnership based projects, provides a common thread between actors engaged in the various pillars and offers a neutral bridge for fostering cooperation and teamwork. In many places, the diverse partnerships work on multiple pillars simultaneously.

(Global Road Safety Partnership, 2011)

Multi-sectoral decision making and planning

- In practice road safety is a shared responsibility at international, national, regional, and local levels. Achieving road safety results is a multi-disciplinary activity which takes place in a complex multi-sectoral context. Multi-sectoral activity provides both the opportunity for a holistic system-wide approach and the possibility that safety interests will be submerged by competing interests. It thus requires careful management and leadership.

(Safety Net, 2009)

- Integration of road safety into other policy areas can be understood as systematically taking the issue and mainstreaming it into other related fields of policy.
- It is argued that useful synergies can be created and achieved and certain objectives can be met through integrating safety into other areas, in line with the Safe System approach. For integration to achieve these benefits one needs to identify potential conflicts and look at ways to overcome them.
- Other policy areas with the strongest links to road safety are employment, environment and health. There is also a longer list of a second tier of policy areas with a clear link to road safety: trade and procurement; liveable cities; transport accessibility and equity; development co-operation; policing; and tourism.
- Road safety policy integration can add strength in achieving joint objectives, pooling of resources and greater efficiency.

(Townsend, 2013)

Legislation

This function focuses on the specification and compliance with legislation and within this synthesis relates to the responsibilities of organisations involved in road safety management. Legislation is relevant at both a national and local level.

- Responsibility for road safety is most evidently incorporated into two key pieces of legislation: The 'Road Traffic Act 1988: 39: Powers of Secretary of State and local authorities as to giving road safety information and training' and the 'Local Government and Public Involvement in Health Act 2007: 116: Health and social care: joint strategic needs.

- Under these two Acts, local authorities must:
  - Prepare and carry out a programme of measures designed to promote road safety and may make contributions towards the cost of measures for promoting road safety taken by other authorities or bodies.
  - Carry out studies into RTIs arising out of the use of vehicles on roads or parts of roads, other than trunk roads, within their area.
  - In the light of those studies, take such measures as appear to the authority to be appropriate to prevent such RTIs, including the dissemination of information and advice relating to the use of roads, the giving of practical training to road users or any class or description of road users, the construction, improvement, maintenance or repair of roads for which they are the local authority (in Scotland, local roads authority) and other measures taken in the exercise of their powers for controlling, protecting or assisting the movement of traffic on roads.
  - In constructing new roads, take such measures as appear to the authority to be appropriate to reduce the possibilities of such RTIs when the roads come into use.
  - Alongside the relevant Primary Care Trusts (PCTs), prepare and publish an assessment of relevant health needs (which includes the measure of RTIs where relevant).

(AIRSO et al, 2015)

Funding and resource allocation

This function focuses on the funding and resourcing of interventions. This aspect also relates to evaluation to ensure that interventions are funded in a sustainable way.

- The economic environment has seen extensive cuts in public services which are having an impact on many of the partner agencies involved in delivery of road safety.

(Christie and Buckle, 2012)

- With further budget restrictions over the next few years, Local Authorities must seek to get the most out of every pound spent on their services, and will be making very difficult decisions on where to reduce spending. Road safety cannot be immune to these financial realities, but there are many reasons to protect road safety spending, as much as possible.
- As the lead delivery agent of road safety activity, Local Government needs to protect road safety spending, as much as possible. It is an ethically, socially and economically sound policy area that will deliver real cost savings, and improve peoples' lives. It is essential to ensure that road safety funding is used effectively and provides value for money.

- In the current climate of declining resources, it is increasingly important to use those resources most effectively. It is equally important to assess whether and how road safety programmes have achieved their aims (and if not, why not) so that future road safety programmes can be improved. Publishing the results of evaluations also helps to share any lessons learned – evaluation results become part of the evidence base for road safety.

(AIRSO et al, 2015)

A study examining the period of 2010-2015 explored the impact of spending cuts, increased devolution and localism in the United Kingdom.
- There is now far greater diversity in road safety strategy across the UK. The devolved administrations in Northern Ireland, Scotland and London have been more ambitious and appear to have co-ordinated their road safety agenda across national, regional and local levels.
- The absence of national road safety casualty targets for England is seen as a key reason for a lack of focus on road safety at the local level, which has had negative consequences in terms of priority, resources and operational capacity.
- Local road safety partnerships suffered significantly in the early part of this period. There are signs that road safety partnerships are now regaining their capacity as a result of NDORS (the National Driver Offender Retraining Scheme) funding.
- Joined up working that links public health, sustainable transport and other sectors is welcomed by local road safety practitioners.

(Amos et al., 2015)

Promotion

Road safety management is promoted via a number of resources provided by many organisations with an interest in road safety.

Monitoring and evaluation

The monitoring and evaluation of interventions is essential to drive improvements. Monitoring and evaluation also helps to ensure that targets are being met.

In order to assist with the process of evaluating educational interventions, a common taxonomy of behaviour change techniques has been proposed.
- There is a growing awareness of the need to evaluate interventions and to identify the most effective mechanism by which behaviour can be changed. Progress has been hindered due to the lack of a common taxonomy with which to define specific techniques used in attempts to change behaviour.
- As such, 27 behaviour change techniques (BCTs) were identified that can be used in road safety interventions.

- If road safety interventions are to achieve substantial and sustained change in behaviour, they would benefit from being based more clearly on theoretical models of behaviour change and making use of BCTs that are congruent with the target behaviour.
- Developers of interventions should specify which BCTs are being used in both evaluation manuals and evaluation reports so that an evidence base can be compiled, showing which BCTs can achieve effective, long-term change and contribute to reducing casualties.

(Fylan and Stradling, 2014)

Research and knowledge transfer
Research and knowledge transfer is conducted by a number of organisations.
- Good practice countries believe that research, technical support and knowledge transfer underpin their road safety performance and ensure that this sector is well-supported. Key activities include:
  - Developing capacity for multi-disciplinary research and knowledge transfer;
  - Creating a national road safety research strategy and annual programme;
  - Securing sources of sustainable funding for road safety research;
  - Training and professional exchange;
  - Establishing best practice guidelines; and,
  - Setting up demonstration projects.

(Safety Net, 2009)

There is a framework within the UK for partnership between business and academia, known as 'Knowledge Transfer Partnership' (KTP).
- The KTP is a government funded project that puts a recent graduate in the workplace with supervision from their employer and a university.
- Cornwall Council (and other authorities) has used this mechanism to embed an evidence-based practice (EBP) into road casualty reduction.
- The approach begins with case studies of priority risk groups. The research and collision data are critically appraised and an understanding of the implications for road safety interventions, in terms of relative need and effectiveness, is developed.
- Change management groups are formed with road safety practitioners, engineers and police, where recommendations from the research can be embedded in practice.
- The groups allow evidence to be communication effectively from researcher to practitioner, allowing a sustainable, affordable mechanism for bridging the gap between theory and practice.

(Hurst et al., 2014)

An online survey of more than 3,000 stakeholders (mostly European) sought to analyse their needs and priorities for evidence-based policy making.

- It found that researchers and policy-makers do not have significantly different needs.
- Needs and priorities concern both the data to be collected or made available and the tools to be developed or made available to support science-based policy-making.
- The conclusion was that a global framework of data and information, supportive of all stages of road safety analysis and policymaking – from fact finding to programme development, to implementation and evaluation – is therefore required for reliable analysis and science-based decision making.

(Papadimitriou and Yannis, 2014)

Interventions

Interventions look to prevent RTIs and reduce the severity and consequences of RTIs.

- Inventions are divided into three intervention types:
  - Planning, design, operation and use of the road network;
  - Conditions of entry and exit of vehicles and road users to the road network; and,
  - Recovery and rehabilitation of RTI victims from the road network.

(Safety Net, 2009)

In 1968 Dr William Haddon developed a matrix for road safety which is used to this day. An important consideration of the matrix is the effective management of the energy within a RTI which leads to injury. In the 1970's and 1980's there was an important move away from driver interventions to system-wide interventions including pre-RTI events and occupant protection.

- Haddon's three-by-three RTI causation and severity matrix is a useful device to categorise the myriad possible reasons for RTIs. On one edge of the matrix are the categories of the driver, the vehicle and the highway. The other edge has the categories of factors that occur *'Prior to the RTI'*, *'During the RTI'* and *'After the RTI'*.
  - 'Prior to the RTI' include factors such as driver licensing and training, and the design of the vehicle and the roadway.
  - 'During the RTI' the severity of the outcomes can be mitigated by the driver having previously decided to wear a safety belt, design features of the vehicle and also highway design features such as guard rails and the cushioning of bridge abutments.
  - 'After the RTI' is often overlooked. It could be argued that a considerable reduction in the rate of fatalities and serious injuries has resulted from faster and better-equipped emergency medical response. Physicians often talk of the 'golden first hour' that exists for attending to and transporting to hospital seriously injured people. (Savage, 2012)

Other matrices such as the Goals for Driver Education (GDE) Matrix can help to identify the way in which interventions such as education or training can be delivered.

- A study conducted in Sweden put focus on the relationship between training patterns, test results, and RTI involvement and explored if there were differences in these relationships among men and women. It was identified that there are a number of factors influencing the RTI relationships such as personality, lifestyle, motivation and attitudes.
- These influences are well-known and the identification of such influences enables the improvement of driver education. The GDE Matrix addresses these influences.
- In Sweden the GDE matrix and the ideas around it have formed the foundation of new national goals for driver education.
- It is expected that these additional 'factors' are included in driver education, either as indicators of how to individualise education or as educational content. (Nyberg and Gregersen, 2007)

The 3 E's approach vs the safe system approach

The responsibilities related to local authorities are often implemented at a local level using the 3 E's approach. It is noted however that this approach has been somewhat superseded by the safe system approach.

- There have been significant improvements in the ways of managing road safety in recent times. There has previously been an emphasis on the 3 Es – Engineering, Enforcement and Education. This has provided a useful framework for improving safety, but did not generally look at specific groups, issues and risks. More recently there has been interest in both the systems approach to road safety and the public health approach.
- The systems approach seeks to identify and rectify the major sources of error or design weakness that contribute to KSI RTIs, as well as to mitigate the severity and consequences of injury. A number of elements in a system all need to go wrong for a serious RTI to occur. The aim is to recognise that people will make mistakes and to build the system around this understanding.
- The private and voluntary sectors have a major role to play. Much of the improvement in road safety is due to the steep changes in vehicle safety delivery by manufacturers, while businesses more generally have a responsibility and a strong commercial imperative to ensure their employees are safe drivers. The voluntary sector has played a key role in promoting and delivering better road safety, including through raising awareness and education.

(DfT, 2011)

- The Safe System Model or Vision Zero approaches to road safety are valuable, but need to be integrated with a common vision for a sustainable transport system developed in conjunction with energy, transport, health, environment, and education agencies.

(May et al, 2011)

- Good road safety management adopts the Safe System Approach advocated by the World Health Organisation. The safe system approach recognises that people make mistakes, and designs roads and vehicles to minimise the risk of crashes occurring, and to ensure that when they do occur, they are much less likely to result in death or serious injury. The Safe Systems Approach ensures that measures to prevent injuries extend beyond trying to change individual behaviour, and include changing vehicles, roads and vehicle speeds.

    (AIRSO et al, 2015)

- An essential tool for effective RTI prevention is the adoption of a systems approach to:
    o Identify problems;
    o Formulate strategy;
    o Set targets; and,
    o Monitor performance.

    (Peden et al, 2004)

- While the specific details vary, Safe System approaches typically:
    o Have the long-term aim of eliminating traffic related deaths and serious injuries;
    o Aim to develop a road traffic system better able to accommodate human error. This is commonly achieved through better management of RTI energy, so that no individual road user is exposed to RTI forces likely to result in death or serious injury;
    o Incorporate many strategies for better management of RTI forces, with a key strategy being road network improvements in conjunction with speed limits set, the latter set in response to the level of protection offered by the road infrastructure;
    o Rely on strong economic analyses to understand the scale of the trauma problem, and direct investment into those programmes and locations where the greatest potential benefit to society exists;
    o Are underpinned by comprehensive leadership, management and communication structures, incorporating all key government agencies and other organisations, which have a role in determining the safe functioning of the traffic system;
    o Align safety management decision-making with broader societal decision making to meet economic goals and human and environmental health goals, and to create a commercial environment that generates demand for, and benefits the providers of, safe road traffic products and services; and,
    o Embrace the ethos of 'shared responsibility' for road safety among the various actors of the road traffic system, such that there is a shared vision amongst citizens, public, private and not-for-profit organisations regarding the ultimate safety ambition, and how to achieve it.

    (BS ISO 39001, 2012)

Important aspects of the safe system include mobility management and land use planning; these issues have been researched and are discussed below.

- In the midst of this road safety 'epidemic', many governments are also pursuing more sustainable community development patterns to address climate change and non-renewable energy challenges.
- This drive to more sustainable land use and transportation may hold the key to global road safety improvement, as built environment directly influences the amount of auto dependence, even more so than socio-economic status. More sustainable built form, in terms of walking, bicycling, and transit-friendly neighbourhoods is expected to lead to reduced auto use, which in turn has been associated with reduced road RTIs.
- Recent comparisons of global vulnerable road user RTI statistics suggest that, in addition to mixed land use density, the layout of neighbourhood roads plays a vital role in the encouragement of walkable, safe and quiet, yet accessible and sustainable communities.
- To test the road safety hypothesis, researchers evaluated the level of road safety relative to five neighbourhood patterns – grid, cul-de-sac, Dutch Sustainable Road Safety (SRS) (or limited access), 3-way offset, and fused grid networks. Analysis using standard transportation planning methodology revealed that they would maintain both mobility and accessibility. Analysis using standard road safety analysis methodology further revealed that the 3-way offset and fused grid patterns would significantly improve road safety levels by as much as 60 per cent compared to prevalent patterns (i.e. grid and cul-de-sac).

(Wei and Lovegrove, 2012)

- During a study conducted in 2009, secondary retail and high density residential land use types were associated with all child pedestrian casualties. In addition, educational sites, junction density, primary retail and low density residential land use types are also associated with child casualties at different time periods of the day and week. Models used also predicted that secondary retail is positively associated with child casualties.
- According to the results, high density land use is negatively associated with child pedestrian casualties.
- The study findings are found to concur with the current child road safety policies in Great Britain and will, in fact, provide some guidance for local authorities to deliver successful child road safety audits.
- The study finds that the association of child pedestrian casualties to land use can reveal important linkages where underlying characteristics are likely to be causative factors of such casualties.

(Dissanayake et al, 2009)

- Mobility management (also called Travel Demand Management (TDM)) is currently not integral to road safety considerations. It provides a good example of working towards deep change. There is a strong case for mobility management strategies that reduce per capita vehicle travel (exposure) being of value in reducing overall RTI risk.

(May et al, 2011)

- TDM consists of a variety of policy measures that affect the transportation system's effectiveness by changing travel behaviour. The primary objective to implement such TDM strategies is not to improve traffic safety, although their impact on traffic safety should not be neglected.
- A study conducted in Belgium showed a considerable traffic safety benefit when a fuel-cost increase scenario was implemented. A 20 per cent increase in fuel price was predicted to reduce the annual vehicle kilometres travelled (VKT) by 5.02 billion (11.57 per cent of the total annual VKT in Flanders, Belgium), which could cause the total number of injury RTI to decline by 2.83 per cent.

(Pirdavani et al, 2013)

Results

The ultimate element of road safety management is the measurement of the outcomes of the interventions used.
- Good practice countries set quantitative outcome and intermediate outcome targets to achieve their desired results focus. The overall target is to reduce the socio-economic costs of road RTIs.
- A second level of targets requires specific reductions in the numbers of fatalities and serious injuries.
- A third level of targets consists of intermediate outcomes (including those related to speed, drink driving and rates of seat-belt wearing) that are consistent with the targeted reductions in final outcomes.
- A fourth level of targeting is concerned with institutional delivery outputs such as the enforcement outputs that are required to achieve the third-level targets

(Safety Net, 2009)

A study of 129 countries looked at demonstrating a correlation between the maturity of a country's road safety practices and road safety incidents.
- Road safety practices with enforcement of speed limits and promotion of alternative modes are the most significant road safety practices toward which mature countries have concentrated their efforts, resulting in a lower frequency of fatalities, injury rates, and property damage collisions.

(Amador and Willis, 2014)

How effective?

- It has been evident throughout the evaluation (of the delivery of local road safety) that a 'synergy' effect has been achieved by local and sub-regional partnerships. The key benefits identified by partnership members included:
  - Greater resource availability (financial and personnel);
  - Wider stakeholder contacts, networks and, therefore, involvement/influence;
  - Reduced duplication of investment;
  - Integration of investment solutions ('packages') generating benefits greater than the individual elements; and,
  - Economy of scale due to the increased bargaining power of a partnership, especially in the case of ETP interventions.

(AECOM, 2011)

- Within the overall Road Safety Partnership Grant Scheme, some key learning points include the following:
  - Education, Training and Publicity and enforcement initiatives, which are well-targeted on high risk groups and use data effectively, can have substantial impacts reducing road deaths and serious injuries.
  - Close collaboration with partners has often been vital.
  - In some cases, participation by partner organisations was not as fully realised as originally envisaged (or promised). The importance of defining and then maintaining partner relationships and contribution throughout the project and beyond (whether financial or in-kind) was keenly felt.
  - Notwithstanding effective scheme project planning, some larger-scale engineering projects found additional delays caused by utility networks negotiation, recruitment and local political scrutiny.
  - In a number of cases, the projects led to better co-operation between neighbouring authorities.

(DfT, 2009a; 2009b)

- An assessment of the road safety management strategies employed in Western Australia, the Netherlands, Sweden and Switzerland identified some key factors for success.
  - Setting realistic targets, designing road safety strategies and action plans to achieve these targets and monitoring progress have resulted in more scientific research to support decision-making and improved the quality of decisions.
  - Ex-post and ex-ante evaluations are critical to further underpin road safety management decisions.
  - Transferability of research results in road safety (external validity) deserves further research.
  - High-quality road safety data and statistics are essential for road safety management.
  - There were clear indications that decision makers are willing to accept results from scientific research.

(Wegman et al., 2015)

- The key themes that emerged from a survey of Road Safety Officers in 2012 were:
  - The value of partnership working: nearly all participants felt that partnership working was very important and achieved more than by working alone.
  - Impact of loss of funding: many felt the loss of the specific Road Safety grant made it very difficult to keep the strategic partnerships going.
  - Partnership working has suffered since the grant finished and economic recession begun: a key barrier to partnership working was the loss of funds provided by the grant and because of cuts related to economic recession.
  - Partners-gains and losses: most of the road safety officers said that they were still working with key professional partners although many reported the diminishing role of the police in their partnership as they were retreating to core business, such as enforcement. This was described as one of the 'biggest fall outs' from the partnerships dissolving.
  - Forward looking partnerships: many participants were determined to continue to work in partnership and were positive about the challenge of working together to deliver cost efficient road safety interventions.
  - The community as a partner: Useful information emerged regarding how they engaged with the community and what mechanisms were used. None of the participants had been given specific training about how to engage with the community. Many participants highlighted the importance of engaging with the local community, especially for behaviour change.
  - Sustainability: uncertainty about the future was a key theme with isolated examples of where participants were identifying opportunities to ensure the sustainability of the partnership. Some participants saw the move of public health to the local authority and the 'Joint Strategic Needs Assessment' process as a way of embedding casualty reduction as a future health and wellbeing outcome.
- The National Institute for Health and Clinical Excellence (NICE) has also called for formal road safety partnerships to be maintained or established to manage road safety activities and that they should include the road safety team, Fire and Rescue services, the injury prevention coordinator, the NHS, Police, local education authorities and local safeguarding boards. NICE recommend that partnerships should:
  - Have a member of staff responsible for road safety partnership work;
  - Develop policies with the community; and,
  - Secure funding for local projects that makes best use of local data to understand the demographics and risk-exposure data of those involved in injuries.

(Christie and Buckle, 2012)

- Multi-sector partnerships create sustainable change in road safety by bringing together all the relevant stakeholders, from business, government and civil society organisations, and helping them to implement proven road safety solutions that are adapted for the local language and context.
- Despite the very different approaches used by these three sectors, within a partnership the right platform can be found to discuss and identify the problems and to seek sustainable, locally owned and managed solutions.

(Global Road Safety Partnership, 2011)

- Without the support (whether in kind or financial) of partners, projects [supported by the Road Safety Partnership Grant scheme] would not have been successful, especially in terms of helping to target hard to reach audiences. Several of the projects demonstrate clearly that effective collaborative working often brings about better results.
- Local partners are always important and many of the projects showed excellence in working this way. In the projects in Luton, Buckinghamshire and West Sussex, the support of police partners was key to successful outcomes. In Luton and Haringey, great efforts were made to work with the local Muslim communities through their leadership groups. Similarly, in Wigan, this idea was taken and extended to creating road safety champions from the local community.

(King et al, 2011)

- As part of a Road Safety Officers (RSO) team leaders' survey, RSOs were asked to what extent working with partners helped respondents to conduct road safety education, training and publicity and build their capacity within existing budgets. The majority (70 per cent) of respondents said that partnership working provided them with new skills/resources, and expanded capacity of what they could do with existing budgets. A further 25 per cent felt that it gave them access to new skills but did not necessarily help them to stretch budgets and 5 per cent said that it helped the budget, but did not increase their skills base. None of the respondents provided a wholly negative response (i.e. that partnership working neither provides new skills/resources nor expands what can be done within existing budgets).
- The key factor in successful partnership working was identified as establishing and maintaining communication with partners. It was considered important to be persistent, especially with the schools. Once dialogue is established, it has to be kept regular and two-way. The most successful partnerships have been established this way and schools have become proactive in approaching the RSOs. One problem identified was the high turnover of teachers. It was considered important that schools be proactive and take responsibility for the hand over of contact details to maintain liaison between the two parties.

- Working partnerships with other partners relied more heavily on individuals who were interested in road safety education and on the time they were allocated to spend on the area. If these contacts moved jobs or retired, the impact on partnership working was considerably higher than with schools. Officers felt there was little that they could do themselves to control this.

- Despite close working relationships with a number of partners, some officers still said that there was scope for closer partnership working. The main groups that officers would like to work more closely with were health authorities and health workers, driving and riding organisations or instructors, the Department for Children, Schools and Families (DCSF) and educational groups, and emergency services staff.

(MVA Consultancy, 2009)

- Although road safety and environmental concerns are both important areas of concern, they are often considered separately with the advocates of each area tending to operate separately. The opportunity and imperative exists to bring sustainable transport and road safety together in a more integrated way in order to facilitate better environmental and road safety outcomes.

(May et al, 2011)

References

Title: Road Safety Management
Author / organisation: Safety Net Project co-financed by the European Commission, Directorate-General Transport and Energy **Date:** 2009 **Format:** Pdf **Link:** http://ec.europa.eu/transport/road_safety/specialist/knowledge/pdf/road_safety_management.pdf **Free / priced:** Free
Objectives: To provide guidance to decision-makers and practitioners on steps to achieving ambitious results.
Methodology: This text is based on two recent major pieces of work by the World Bank, and the OECD which set out the current state of the art in road safety management and its assessment.

Key Findings:
• As outlined by the WHO and the World Bank, progressive shifts in road safety management thinking and practices in high-income countries have been evident. Since the 1950s there have been four significant phases of development, which have become progressively more ambitious in terms of the results desired:
    ○ Phase 1 - Focus on driver interventions (1950's and 1960's).
    ○ Phase 2 - Focus on system-wide interventions (1970's and 1980's)
    ○ Phase 3 - Focus on system-wide interventions, targeted results and institutional leadership.
    ○ Phase 4 - Focus on system-wide interventions, long-term elimination of deaths and serious injuries and shared responsibility.
• The latest evolution of the road safety management system which is recommended for use by the World Bank and the OECD is a pyramid. Safety is produced just like other goods and services and the production process is viewed as a management system with three levels: institutional management functions which produce interventions, which in turn produce results.
The three levels of the pyramid are detailed below:
• Institutional management functions: The seven identified institutional management functions are the foundation on which road safety management systems are built. They are essential for the production of interventions which, in turn, achieve road safety results and for this reason they must receive the highest priority in road safety planning and policy initiatives. The institutional management functions relate to all government, civil society and business entities that produce interventions and ultimately results.
• Interventions: Broadly, these comprise system-wide strategies and programmes of interventions to address safety targets. Interventions cover the planning, design and operation of the road network, the entry

and exit of vehicles, and users into the road network, and the recovery and rehabilitation of RTI victims. They seek to manage exposure to the risk of RTIs, prevent RTIs, and reduce RTI injury severity and the consequences of RTI injury. They comprise safety designs, standards, and rules and well as a combination of activity to secure compliance with these such as information, publicity, enforcement and incentive.

- Results: In good practice management systems road safety results are expressed in the form of long term goals and interim quantitative targets. Targets specify the desired safety performance endorsed by governments at all levels, stakeholders and the community. To be credible, interim targets must be achievable with cost-effective interventions. Targets are usually set in terms of final outcomes. They can also include intermediate outcomes consistent with their achievement, and institutional output measures required to achieve the intermediate results.

- The road safety management system has a number of generic characteristics that allow for its universal application to all countries, irrespective of their development status or road safety performance.

- Road safety in a complex multi-sectoral context: In practice road safety is a shared responsibility at international, national, regional, and local levels. Achieving road safety results is a multi-disciplinary activity which takes place in a complex multi-sectoral context. Multi-sectoral activity provides both the opportunity for a holistic system-wide approach and the possibility that safety interests will be submerged by competing interests. It thus requires careful management and leadership.

Themes: Multi-sectoral, Targets, Road safety management development.

Comments: Gives a useful insight into the development of road safety management over time.

Title: Strategic Framework for Road Safety
Author / organisation: Department for Transport
Date: 2011   **Format:** Pdf https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/8146/strategicframework.pdf
Free / priced: Free
Objectives: To set out the strategic framework for road safety and the package of policies that the DfT believe will continue to reduce deaths and injuries on our roads.
Methodology: Not applicable.
Key Findings: - There have been significant improvements in the ways of managing road safety since the last strategy. There has previously been an emphasis on the three Es – engineering, enforcement and education. This has provided a useful framework for improving safety, but did not generally look at specific groups, issues and risks. More recently there has been interest in both the systems approach to road safety and the public health approach.   - The systems approach seeks to identify and rectify the major sources of error or design weakness that contribute to fatal and severe injury RTIs, as well as to mitigate the severity and consequences of injury. A number of elements in a system all need to go wrong for a serious collection to occur. The aim is to recognise that people will make mistakes and to the build the system around this understanding.   - The Road Traffic Act 1988 placed a duty on local highway authorities to prepare and carry out a programme of measures designed to promote road safety. This includes studying the occurrence of RTIs, taking preventative measures and reducing the possibility of casualties on new roads (i.e. RTI investigation, prevention and safety audit). During the last twenty years these measures have contributed to the large reductions in deaths and serious injuries on Britain's roads, with for example a recent year's worth of local highways road safety engineering resulting in fifty deaths a year being prevented.   - Local authorities are gaining a greater role in achieving public health outcomes, with road safety being one of these.   - Other local public services, including the health service and the three emergency services are influential in improving road safety and also have statutory responsibilities   - The private and voluntary sectors have a major role to play. Much of the improvement in road safety is due to the steep changes in vehicle safety deliver by manufacturers, while business more generally have a responsibility and a strong commercial imperative to ensure their employees are safe drivers. The voluntary sector had played a key role in promoting and delivering better road safety, including through raising awareness and education.
Themes: Strategy, Private and voluntary sectors, Engineering, Education and Enforcement.
Comments: A policy document.

Title: Making Road Safety Count. Spending choices which protect your community
Author / organisation: Association of Industrial Road Safety Officers (AIRSO), Royal Society for the Prevention of Accidents (RoSPA),The Parliamentary Advisory Council for Transport Safety (PACTS),British Motorcyclist Federation (BMF), CTC, London Road Safety Council, Institute of Advanced Motorists (IAM) and Chartered Institution of Highways and Transportation (CIHT)   **Date:** 2015   **Format:** Pdf   **Link:** http://www.rospa.com/rospaweb/docs/advice-services/road-safety/practitioners/making-it-count.pdf   **Free / priced:** Free
Objectives: N/A
Methodology: N/A
Key Findings: - While central government sets the regulatory framework for roads, vehicles and road users, and national road safety strategies, road safety delivery occurs primarily at the local level with local government being the lead delivery agent, working in partnership with many other agencies and stakeholders.   - Good road safety management adopts the Safe System Approach advocated by the World Health Organisation. The safe system approach recognises that people make mistakes, and designs roads and vehicles to minimise the risk of crashes occurring, and to ensure that when they do occur, they are much less likely to result in death or serious injury. The Safe Systems Approach ensures that measures to prevent injuries extend beyond trying to change individual behaviour, and include changing vehicles, roads and vehicle speeds.   - At the local level, as budgets are reduced, the development of effective partnerships is an essential strategic approach. It makes it far easier to look at the whole area, the range of policy objectives and the needs and wishes of the community. It enables areas of policy overlap and conflict to be identified, priorities agreed, resources and expertise to be shared and the cost burden to be spread.   - There are many organisations who work with Local Authorities to deliver road safety including the Police, Fire and Rescue Services and Public Health as well as many non-government organisations and private industry stakeholders. It is vital that these links are expanded to include other key members of society such as teachers, medical professionals and religious and community leaders. In many areas of the country these relationships are formalised in a local Road Safety Partnership or Casualty Reduction Partnership.   - Responsibility for road safety is most evidently incorporated into two key pieces of legislation: The 'Road Traffic Act 1988: 39: Powers of Secretary of State and local authorities as to giving road safety information and training' and the 'Local Government and Public

Involvement in Health Act 2007: 116: Health and social care: joint strategic needs.

- Under these two Acts, local authorities must:
  - o Prepare and carry out a programme of measures designed to promote road safety and may make contributions towards the cost of measures for promoting road safety taken by other authorities or bodies.
  - o Carry out studies into RTIs arising out of the use of vehicles on roads or parts of roads, other than trunk roads, within their area.

  - o In the light of those studies, take such measures as appear to the authority to be appropriate to prevent such RTIs, including the dissemination of information and advice relating to the use of roads, the giving of practical training to road users or any class or description of road users, the construction, improvement, maintenance or repair of roads for which they are the local authority (in Scotland, local roads authority) and other measures taken in the exercise of their powers for controlling, protecting or assisting the movement of traffic on roads.
  - o In constructing new roads, take such measures as appear to the authority to be appropriate to reduce the possibilities of such RTIs when the roads come into use.
  - o Alongside the relevant Primary Care Trusts (PCTs), prepare and publish an assessment of relevant health needs (which includes the measure of RTIs where relevant).
- With further budget restrictions over the next few years, Local Authorities must seek to get the most out of every pound spent on their services, and will be making very difficult decisions on where to reduce spending. Road safety cannot be immune to these financial realities, but there are many reasons to protect road safety spending, as much as possible.
- As the lead delivery agent of road safety activity, Local Government needs to protect road safety spending, as much as possible. It is an ethically, socially and economically sound policy area that will deliver real cost savings, and improve peoples' lives. It is essential to ensure that road safety funding is used effectively and provides value for money.
- In the current climate of declining resources, it is increasingly important to use those resources most effectively. It is equally important to assess whether and how road safety programmes have achieved their aims (and if not, why not) so that future road safety programmes can be improved. Publishing the results of evaluations also helps to share any lessons learned – evaluation results become part of the evidence base for road safety.

Themes: Responsibility, Local Authorities, Relationships

Comments: Provides information.

Title: Association between setting quantified road safety targets and road fatality reduction
Author / organisation: S.C. Wong , N.N. Sze, H.F. Yip, B.P.Y. Loo, W.T. Hung and H. K. Lo, Accident Analysis and Prevention, Volume 38, pp. 997-1105.   **Date:** 2006   **Format:** Pdf   **Link:** http://www.sciencedirect.com/science/article/pii/S0001457506000534   **Free / priced:** $41.95
Objectives: To assess the association between quantified road safety targets and road fatality reduction over the past two decades.
Methodology: This study evaluates the effectiveness of quantified road safety targets in 14 countries during the period 1981–1999. Both aggregate and disaggregate levels of hypothesis tests are performed on data. A before and after analysis of the treatment and comparison groups is conducted.

Key Findings:

- For a road safety strategy to be successful, it is generally believed that realistic quantified road safety targets should be set.
- A quantified road safety target is a number or index that is set by a national or local government to reduce the number of people who are killed or injured in road traffic RTIs.
- The role of road safety targets in achieving the safer use of roads is to provide a basis for motivating and monitoring actions to reduce death and injury in road traffic RTIs.
- As a key component of road safety strategies, road safety targets need to be quantitative and measurable so that it can be ascertained whether the target has been achieved, and if it has not been achieved, then the extent to which the result is short of the target.
- Quantified road safety targets have been set in a number of countries in recent decades. Most countries in Europe (such as Finland, France, The Netherlands, Sweden, and the United Kingdom) and some countries in other parts of the world (including Australia, New Zealand, and the United States) have set quantified targets for the improvement of road safety, and have subsequently developed specific programs to realise these targets.
- There is, however, little research on the evaluation of the association between the setting of road safety targets and the reduction of traffic RTIs and casualties. Although a quantified road safety target may not have a direct effect on the number of fatalities, it may serve as an effective catalyst that motivates policy makers and stakeholders to support road safety programs that are developed to meet the target.
- The majority of countries with quantified road safety target experienced a reduction in road fatalities in this period.
- The results show that the overall reduction in road fatalities is significant after the setting of quantified road safety targets.
- It is envisaged that the setting of quantified road safety targets helps to raise concern about road safety in societies, encourages decision-

makers to formulate effective road safety strategies, and ensures that sufficient resources are allocated to road safety programs.   • Overall, the establishment of quantified road safety targets is found to have an appreciable association with an improvement in road safety.   • A more comprehensive and in depth study on other relevant factors, such as level of education, driving age, driver training, and national income, along with other essential components that should be taken into account in the setting of effective road safety targets, such as vision, objectives, action plan, evaluation and monitoring, research and development, quantitative modelling, institutional framework, and funding, is necessary in the future.
Themes: Road safety targets, Modelling, RTI reduction.
Comments: Useful in highlighting that countries where road safety targets are set experience a reduction in RTIs but this cannot be quantified at present.

Title: Delivery of Local Road Safety (Road Safety Research Report No. 124)
Author / organisation: AECOM in association with Tavistock Institute prepared for the Department for Transport. **Date:** 2011　　**Format:** Pdf http://webarchive.nationalarchives.gov.uk/20121105134522/http://www.dft.gov.uk/publications/rsrr-124/ **Free / priced:** Free
Objectives: In 2008 the Department for Transport commissioned AECOM, in association with the Tavistock Institute, to design and deliver a three-year independent evaluation of local road user safety. The evaluation was commissioned to consider the following objectives: 　• To evaluate the different strategies and plans for delivering road user safety; 　• To assess what is being delivered, the key processes and how efficient local highway authority (LHA) practices are; and 　• To identify lessons and areas of good practice in road user safety investment.
Methodology: Detailed review and exploration of engineering, enforcement and education, training and publicity (ETP) interventions.
Key Findings: 　• The focus for partnership working was once almost solely on improving outcomes, the assessment of efficiencies and ensuring value for money has become increasingly evident. This shift towards increasing productivity is changing the nature and extent of partnership working, including greater emphasis on: 　　○ Shared services and joint strategic commissioning; 　　○ A 'whole area' approach to managing budgets; and 　　○ New models for service delivery. 　• Local Government Improvement and Development identified the following overarching findings relating to future partnership working within local authorities: 　　○ The commitment to partnership working remains strong in the majority of authorities; 　　○ Partners are focusing on reviewing strategic objectives, leading to key principles for future collaboration; 　　○ Partnerships are taking the opportunity to consider their approaches to thinking and behaviour rather than merely structure; and 　　○ Partner organisations are seeking ways to pool and align resources to deliver more efficient and effective investment. 　• It has been evident throughout the evaluation that a 'synergy' effect has been achieved by local and sub-regional partnerships. The key benefits identified by partnership members included: 　　○ Greater resource availability (financial and personnel); 　　○ Wider stakeholder contacts, networks and, therefore, involvement/influence;

- - Reduced duplication of investment;
  - Integration of investment solutions ('packages') generating benefits greater than the individual elements; and
  - Economy of scale due to the increased bargaining power of a partnership, especially in the case of Education, Training and Publicity (ETP) interventions.
- The main organisations commonly involved in combining resources are:
  - Local authority;
  - Health stakeholders;
  - Communities, charities and other stakeholders;
  - Police; and,
  - Fire and rescue service.
- Three different levels or types of partnership have been identified through the evaluation, with the majority being established to address primarily road safety issues. Each level has generated benefits among the case study authorities in different areas of road safety delivery, including the following:
  - Mini Partnership – defined as the internal collaborative working within local authorities and between divisions and departments. Benefits have included the utilisation of the skills and resources of other teams, including both funding and human resources.
  - Midi Partnerships – defined as the collaboration between local authorities and key organisations within their authority boundary. These derived from the traditional safety camera partnerships, involving the police, emergency services, etc., to delivery targeted interventions. Examples included a joint local authority and ambulance service leaflet campaign targeting motorcyclists, funded by the former as 'their investment for the future'. Joint schools based delivery between authorities and the fire and rescue service was highlighted as enhancing delivery efficiency and effectiveness.
  - Maxi Partnerships – consisting of regional or sub-regional partnership working between local authorities. Partnerships have been effective in the development and delivery of publicity campaigns to influence cross-border road users (where residence and employment locations are in adjacent authorities) and targeted mode-specific marketing (motorcyclists, for example). Cross-boundary route-based investments have also been assisted through the presence of Maxi Partnerships.
- Partnerships were therefore observed as a central strand of local authority working. The following are further examples of good practice partnership working from the case study local authorities:
  - Establishing common objectives and aims can enhance partnership formation and direction – this can also avoid duplication and contribute to economy of resources;
  - The secondment of partner staff into local authority teams can enhance joint working, providing a better appreciation of delivery pressures and processes – fire and rescue officers have exemplified this, enhancing integration;

o Local authorities, the police and ambulance services collaborated on a regional publicity campaign, using photographs of trauma victims to enhance the underlying message;
   o The presence of national targets, and supporting local level targets, have been important stimuli to local partnership working; and
   o Regional and sub-regional partnerships have been evident, and have been effective for ETP activities – the pooling of resources across authorities and partners can generate cost savings for publicity campaigns.

Themes: Partnerships, Road Safety Management
Comments: Provides information about partnerships.

Title: Road Safety Partnerships in 2012: Sustainability in the 'Big Society'
Author / organisation: N. Christie and P. Buckle prepared for GEM Motoring Assist Road safety Charity **Date:** 2012 **Format**: Pdf **Link:** http://www.roadsafetygb.org.uk/misc/fckeditorFiles/file/Partnerships%20Report%20Final%20May.pdf Free / priced: Free
Objectives: The recent economic climate was thought to potentially affect the long term viability of partnership working and a study was implemented to consider some aspects of this issue. The aims were to explore the views of practitioners regarding how partnership working has changed since the end of the Road Safety Partnership Grant (RSPG), the barriers and facilitators of partnership working, their sustainability and how they engage with the community as a partner.
Methodology: Telephone interviews were conducted among 19 road safety officers who had been in receipt of the RSPG. The sample was anonymous and confidential and interviews were taped and transcribed. Thematic content analyses was undertaken to derive the key themes. A range of verbatim comments have been used to illustrate themes.

Key Findings:
 • Road Safety Partnerships have helped create better road safety outcomes by integrating Education, Engineering and Enforcement and through collaborative working.
 • The key themes that emerged were:
   o The value of partnership working: nearly all participants felt that partnership working was very important and achieved more than by working alone.
   o Impact of loss of funding: many felt the loss of the grant made it very difficult to keep the strategic partnerships going.
   o Partnership working has suffered since the grant finished and economic recession begun: a key barrier to partnership working was the loss of funds provided by the grant and because of cuts

related to economic recession. The majority of participants commented that their partnership working had suffered since the end of the grant and the start of economic recession.

- o Partners-gains and losses: most of the road safety officers said that they were still working with key professional partners although many reported the diminishing role of the police in their partnership as they were retreating to core business, such as enforcement. This was described as one of the 'biggest fall outs' from the partnerships dissolving.
- o Forward looking partnerships: many participants were determined to continue to work in partnership and were positive about the challenge of working together to deliver cost efficient road safety interventions.
- o The community as a partner: Useful information emerged regarding how they engaged with the community and what mechanisms were used. None of the participants had been given specific training about how to engage with the community. Many participants highlighted the importance of engaging with the local community especially for behaviour change.
- o Sustainability: uncertainty about the future was a key theme with isolated examples of where participants were identifying opportunities to ensure the sustainability of the partnership. Some participants saw the move of public health to the local authority and the 'Joint Strategic Needs Assessment' process as a way of embedding casualty reduction as a future health and wellbeing outcome.

- Working in partnership is a key strand of a number of government policies. Where remits and agendas overlap and partners have a vested interest in the outcome it is clear that working together is better than working apart and potentially duplicating effort and resources. Different partners bring different roles, skills, data and insights to resolve a problem.
- The National Institute for Clinical Excellence (NICE) has also called for formal road safety partnerships to be maintained or established to manage road safety activities and should include the road safety team, fire and rescue services, the injury prevention coordinator, the NHS, police, local education authorities and local safeguarding boards. NICE recommend that partnerships should:
  - o Have a member of staff responsible for road safety partnership work;
  - o Develop policies with the community;
  - o Secure funding for local projects that makes best use of local data to understand the demographics and risk-exposure data of those involved in injuries.
- Despite these clarion calls for partnership working the economic environment has seen extensive cuts in public services which are having an impact on many of the partner agencies involved in delivery of road safety.

Themes: Road safety partnerships, Funding.

Comments: Research is based on views of a small sample of participants.

Title: Global Road Safety Partnership, Annual Report 2011
Author / organisation: Global Road Safety Partnership
Date: 2011   **Format:** Pdf
http://www.grsproadsafety.org/sites/grsp.drupalgardens.com/files/GRSP_Annual_Report_2011_LR.pdf
Free / priced: Free
Objectives: Present a summary of achievements in road safety.
Methodology: Not applicable.

Key Findings:
• The Global Road Safety Partnership is a partnership of business, governments and civil society organisations that is dedicated to the sustainable reduction of RTI death and injury in low- and middle-income countries. A hosted project of the International Federation of Red Cross and Red Crescent Societies, based in Geneva, Switzerland, the Global Road Safety's Partnership vision is a world free of road-RTI death and injury.
• To achieve the maximum impact, it helps if everyone is pulling together, moving in the same direction.
• Under the direction of the UN, the Decade of Action for Road Safety offers a common road map for reaching the ambitious goal of reducing road-traffic fatalities globally by 50 per cent. The implementation plan is guided by five key pillars:
   o Better road-safety management
   o Safer roads
   o Safer vehicles
   o Safer road-user behaviour
   o Better post-RTI care
• Importantly, the GRSP, through its partnership- based projects, provides a common thread between actors engaged in the various pillars and offers a neutral bridge for fostering cooperation and teamwork. In many places, the diverse partnerships we are engaged in work on multiple pillars simultaneously.
• Partnership is needed because RTIs do not have a single cause and no single organisation or sector can solve the global road safety challenge.
• Multi-sector partnerships create sustainable change in road safety by bringing together all the relevant stakeholders, from business, government and civil society organisations, and helping them to implement proven road safety solutions that are adapted for the local language and context.
• Despite the very different approaches used by these three sectors, within a partnership the right platform can be found to discuss and identify the problems, and to seek sustainable, locally owned and managed solutions.
• Effective partnerships rely on the unique contributions of each sector: government, business and civil society. The Global Road Safety Partnership brings all the sectors together for maximum effect.
• Road Safety Initiative include before and after studies that assess the results of each action.

Themes: Effective, Partnerships, Multi-sector.
Comments: Outline how the Global Road Safety Partnership works.

Title: The Road Safety Partnership Grant Programme, Summary Report of Impact of Round Two Projects and Progress on Later Projects
Author / organisation: B. King, S. Surtees-Goodall and M. Jeanes, prepared for the Department for Transport. **Date:** 2011 **Format:** Pdf **Link:** https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4004/report.pdf **Free / priced:** Free
Objectives: Provide a summary of outcomes and highlight the key learning points from the projects which benefited from the Department for Transport's Road Safety Partnership Grant Scheme round two, which ran for up to two years from April 2008.
Methodology: Not applicable.
Key Findings: - The second round of the Road Safety Partnership Grant (RSPG) took place for two years starting in 2008/09.   - RSPG was designed to promote: - Partnership working among local authorities and others (including the education sector and youth service as well as other public service organisations such as the health sector, the fire and rescue service, the police and the voluntary sector);   - The take-up and sharing of good practice in the road safety arena;   - Innovative approaches and ways of working to address road safety issues; and   - Main-streaming the most effective lessons learned from other road safety pilot projects.   - A total of 19 projects were funded in this second round of RSPG at a total cost approaching £2.2million.   - The road safety partnership grant aims to demonstrate the pivotal nature of working with local partners, fostering and maintaining good relationships in order to achieve project aims and objectives and successful outcomes. In turn these help to develop platforms for future co-operation.   - Without the support (whether in kind or financial) of partners, projects would not have been successful, especially in terms of helping to target hard to reach audiences. Several of the projects demonstrate clearly that effective collaborative working often brings about better results.   - Local partners are always important and many of the projects showed excellence in working this way. In the projects in Luton, Buckinghamshire and West Sussex, the support of police partners was key to successful outcomes. In Luton and Haringey, great efforts were made to work with the local Muslim communities through their leadership groups. Similarly, in Wigan, this idea was taken and extended to creating road safety champions from the local community.

- The road safety community was already good at sharing and partnership. This was demonstrated well in the case of the West Sussex project, where once it was underway it was realised that suitable materials had already been developed by another Council (South Yorkshire) and so these were used rather than creating some anew.
- An outstanding example of broader partnership working has been the Road Safety Time Bank, developed by six local authorities from across England. Working together they set out to create a product which was a legacy of their success as Beacon Councils but would be useful to all road safety practitioners for a long time. The Road Safety Time Bank has recently been taken over by Road Safety Great Britain, and re-launched as the Road Safety Knowledge Centre. Road Safety Knowledge Centre is now a national tool in the delivery of road safety.
- Several of the projects have demonstrated good partnership with academic establishments and consultants, often in terms of data analysis or improved understanding of the outcomes and outputs. In the case of Devon's Road Safety Academy this cooperative working has been extended. A range of useful education and training resources has been developed for use within Devon and its local partners but these are also opportunities to participate by other road safety professionals from across the country.

Themes: Partnerships, Effectiveness.

Comments: Provides information about the effectiveness of partnership working.

Title: Building on Success: Improving the Delivery of Road Safety Education, Training and Publicity (Road Safety Research Report 99)
Author / organisation: MVA Consultancy prepared for the Department for Transport **Date:** 2009 **Format:** Pdf **Link:** http://webarchive.nationalarchives.gov.uk/20121105134522/http://www.dft.gov.uk/publications/improving-the-delivery-of-road-safety/ **Free / priced:** Free
Objectives: To make practical evidence-based recommendations of actions that could be taken to improve the delivery of road safety education by RSOs and educators, and to make an overall assessment of whether raising the status of road safety education would improve the quality and delivery of provision.
Methodology: The research took place over a 12-month period and comprised five key components: - A comprehensive literature review was carried out to identify gaps in existing understanding and to provide a robust context in which to interpret findings from the current study.   - The design, development and administration of two questionnaire surveys. The first was issued to RSOs across England, with separate tools developed to explore the attitudes of road safety managers and those working at the operational level. The second was a survey of teachers, issued to primary and secondary schools in a sample of English local authorities.   - The survey work was complemented by in-depth case-study interviews with RSOs and other stakeholders in a sample of English local authorities, as well as interviews with policy-makers from local and central government.   - A stakeholder workshop, carried out towards the end of the project, which brought together road safety professionals and other key stakeholders to discuss the findings from the research and explore future ways of working to improve the delivery of road safety education, training and publicity.
Key Findings: - The four main current partners in delivery for RSOs appear to be: - Schools, colleagues and educational establishments;   - Police and camera safety partnerships;   - Health boards and local authority health departments; and,   - Fire and rescue services.   - As part of the RSO team leaders' survey, we asked to what extent working with partners helped respondents to conduct road safety education, training and publicity and build their capacity within existing budgets. The majority (70 per cent) of respondents said that partnership working provided them with new skills/resources, and expanded capacity of what they could do with existing budgets. A further 25 per cent felt that it gave them access to new skills but did not necessarily help them to stretch budgets and 5 per cent said that it

helped the budget, but did not increase their skills base. None of the respondents provided a wholly negative response (i.e. that partnership working neither provides new skills/resources nor expands what can be done within existing budgets).

- The key factor in successful partnership working was identified as establishing and maintaining communication with partners. It was considered important to be persistent, especially with the schools. Once dialogue is established, it has to be kept regular and two-way. The most successful partnerships have been established this way and schools have become proactive in approaching the RSOs. One problem identified was the high turnover of teachers. It was considered important that schools be proactive and take responsibility for the hand over of contact details to maintain liaison between the two parties.

- Working partnerships with other partners relied more heavily on individuals who were interested in road safety education and, again, on the time they were allocated to spend on the area. If these contacts moved jobs or retired, the impact on partnership working was considerably higher than with schools. Officers felt that there was little that they could do themselves to control this.

- Despite close working relationships with a number of partners, some officers still said that there was scope for closer partnership working. The main groups that officers would like to work more closely with were health authorities and health workers, driving and riding organisations or instructors, the Department for Children, Schools and Families (DCSF) and educational groups, and emergency services staff.

Themes: Partnership working

Comments: This research shows that partnerships are viewed in a positive way.

Title: Reflections on the economics of transportation safety	
Author / organisation: I. Savage, Research in Transportation Economics, 43(1), p.1-8.	
Date: 2013	
Format: Pdf	
Link: http://www.sciencedirect.com/science/article/pii/S0739885912002168	
Free / priced: $39.95	
Objectives: To provide context for papers to follow (in the journal issue).	
Methodology: Introductory chapter to a special issue on the economics of transportation safety.	
Key Findings:	

Key Findings:

- The improvement in RTI and fatality rates per vehicle mile has been sufficiently large that the absolute number of RTIs and casualties has also declined despite population growth and increased car ownership. There are many reasons for the improvement.
- A useful device to categorise the myriad possible reasons is Haddon's three-by-three RTI causation and severity matrix. On one edge of the matrix are the categories of the driver, the vehicle and the highway. The other edge has the categories of factors that occur before the RTI, during the RTI and after the RTI.
- Prior to the RTI are factors such as driver licensing and training, and the design of the vehicle and the roadway. During the RTI, the severity of the outcomes can be mitigated by the driver having previously decided to wear a safety belt, design features of the vehicle and also highway design features such as guard rails and the cushioning of bridge abutments.
- An often overlooked factor is events that occur after the RTI. It could be argued that a considerable reduction in the rate of fatalities and serious injuries has resulted from faster and better-equipped emergency medical response. Physicians often talk of the 'golden first hour' that exists for attending to and transporting to hospital seriously injured people.

Themes: Haddon Matrix, Causation, Severity.

Comments: Gives a useful overview of the Haddon Matrix.

Title: Practicing for and performance on drivers license tests in relation to gender differences in crash involvement among novice drivers	
Author / organisation: A. Nyberg and N. P. Gregersen, Journal of Safety Research, Volume 38, issue 1, pp.71-80. **Date:** 2007 **Format:** Pdf **Link:** http://www.sciencedirect.com/science/article/pii/S0022437507000023 **Free / priced:** $31.50	
Objectives: To explore possible gender differences among 18–24-year-olds in Sweden regarding practicing as learners, outcome of the driver's tests, and RTI involvement during the first year after licensure.	
Methodology: Data for 2005 from different sources (e.g., questionnaires, license test, and RTI statistics) were examined.	
Key Findings: • This study has put focus on the relations between training patterns, test results, and RTI involvement and explored if there are differences in these relations among men and women. However, there are certainly a number of factors influencing this relation such as personality, lifestyle, motivation, attitudes, and so forth. • These things are well-known and have been used during a number of years as input for improvement of driver education. This has been extensively addressed in the GDE (Goals for Driver Education) matrix where it is stressed that an important role of driver education is to take into account factors such as lifestyle, personality, motivation, and attitude. • In the case of Sweden, where the present study was carried out, the GDE matrix and the ideas around it have formed the foundation of new national goals for driver education. • It is thus expected that these 'additional factors' are included in driver education, either as indicators of how to individualise education or as educational content as such. • An important aspect for further development of driver education is to make use of the fact that driver behaviour is not solely a consequence of car control skill and knowledge about correct behaviour. It is also a consequence of personal and social factors such as peer groups personality, and lifestyle that influences motivation and choices that are made in driving. They also affect estimation of risks, self assessment, and attitudes toward safe driving. • As long as driver education is not capable of including this overall perspective, the focus will continue to be symptom treatment and not an effort to produce safe drivers through reduction of the real causes behind dangerous driving.	
Themes: Driver education, GDE matrix.	
Comments: Provides useful information related to the GDE matrix.	

Title: Progressing road safety through deep change and transformational leadership
Author / organisation: M. May, P.J. Tranter and J.R. Warn, Journal of Transport Geography, Volume19.
Date: 2011   **Format:** Pdf   **Free / priced:** Free http://www.sciencedirect.com/science/article/pii/S0966692311001098
Objectives: Outline significant policy themes emerging from a research project on a holistic approach to road safety.

Methodology:

- An extensive integrative literature review and synthesis.
- Focus groups exploring sustainable transport and community initiatives such as the walking school bus (WSB) program.
- A final research step involved in-depth interviews and discussions with two prominent champions in the areas of sustainable transport and road safety.

Key Findings:

- Challenges to the current paradigm for road safety are coming from a number of directions, including new thinking on health, ecologically sustainable transport, global environmental change, and the 'slow movement'. In addition, the slowing trend in reducing fatalities in many countries underlines the need for a new approach or vision.
- Improving road safety through reduction in the volume and speed of motorised traffic is integrally related to enhancing health and fitness, reducing greenhouse gas emissions, and improving neighbourhood planning and community cohesion. It is likely that policy and behavioural changes linked to climate change and peak oil will increasingly foster such integration.
- Although road safety and environmental concerns are both important areas of concern, they are often considered separately with the advocates of each tending to operate separately. The opportunity and imperative exists to bring sustainable transport and road safety together in a more integrated way in order to facilitate better environmental and road safety outcomes.
- Two overarching themes emerging from the research include the importance of leadership for policy change and implementation, and addressing the more transformative aspects of intervening in a system.
- Leadership can draw on a variety of ''knowledge cultures'', which can all share in collective decision-making and possible actions for the future. These knowledge cultures include those applying at individual, community, specialist, organisational, and holistic dimensions.
- Safe system model or Vision Zero approaches to road safety are valuable, but need to be integrated with a common vision for a sustainable transport system developed in conjunction with energy, transport, health, environment, and education agencies.
- Mobility management (also called travel demand management) is currently not integral to road safety considerations. It provides a good example of working towards deep change. There is a strong case for mobility management strategies that reduce per capita vehicle travel (exposure) being of value in reducing overall RTI risk.

Themes: Leadership, Policy, Holistic thinking.

Title: World report on road traffic injury prevention
Author / organisation: M. Peden, R. Scurfield, D. Sleet, D. Mohan, A. A. Hyder, E. Jarawan and C. Mathers, World Health Organisation.   **Date:** 2004   **Format:** Pdf   **Link:** http://apps.who.int/iris/bitstream/10665/42871/1/9241562609.pdf   **Free / priced:** Free
Objectives: The central theme of this report is the burden of road traffic injuries and the urgent need for governments and other key players to increase and sustain action to prevent road traffic injury.   The specific objectives of the report are to: • describe the burden, intensity, pattern and impacts of road traffic injuries at global, regional and national levels;   • examine the key determinants and risk factors;   • discuss interventions and strategies that can be employed to address the problem;   • make recommendations for action at local, national and international levels.
Methodology: Over 100 international professionals from the sectors of health, transport, engineering, law enforcement and education – among others – as well as the private sector and nongovernmental organisations, were involved in the development of this report.

Key Findings:
 • An essential tool for effective road RTI injury prevention is the adoption of a systems approach to:
    ○ identify problems;
    ○ formulate strategy;
    ○ set targets; and,
    ○ monitor performance.
 • Road safety efforts must be evidence-based, fully costed, properly resourced and sustainable.
 • The 'systems' approach seeks to identify and rectify the major sources of error or design weakness that contribute to fatal and severe injury RTIs, as well as to mitigate the severity and consequences of injury.

Themes: System approach, Costing, Evidence based
Comments: Describes the system approach.

Title: Road traffic safety (RTS) management systems — Requirements with guidance for use (BS ISO 39001:2012)
Author / organisation: The British Standards Institution **Date:** 2012 **Format:** Pdf **Link:** http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030199096 **Free / priced:** £190
Objectives: N/A
Methodology: This International Standard specifies requirements for a road traffic safety (RTS) management system to enable an organisation that interacts with the road traffic system to reduce death and serious injuries related to road traffic RTIs which it can influence.
Key Findings: - While the specific details vary, Safe System approaches typically: - have the long-term aim of eliminating traffic related deaths and serious injuries;   - aim to develop a road traffic system better able to accommodate human error. This is commonly achieved through better management of RTI energy, so that no individual road user is exposed to RTI forces likely to result in death or serious injury;   - incorporate many strategies for better management of RTI forces, with a key strategy being road network improvements in conjunction with speed limits set, the latter set in response to the level of protection offered by the road infrastructure;   - rely on strong economic analyses to understand the scale of the trauma problem, and direct investment into those programmes and locations where the greatest potential benefit to society exists;   - are underpinned by comprehensive leadership, management and communication structures, incorporating all key government agencies and other organisations, which have a role in determining the safe functioning of the traffic system;   - align safety management decision-making with broader societal decision making to meet economic goals and human and environmental health goals, and to create a commercial environment that generates demand for, and benefits the providers of, safe road traffic products and services;   - embrace the ethos of 'shared responsibility' for RTS among the various actors of the road traffic system, such that there is a shared vision amongst citizens, public, private and not-for-profit organisations regarding the ultimate safety ambition, and how to achieve it.
Themes: Road traffic safety, Management systems, International standard.
Comments: The document highlights the key features of the safe system approach.

Title: Sustainable road safety: A new (?) neighbourhood road pattern that saves VRU lives
Author / organisation: V. F. Wei and G. Lovegrove, Accident Analysis and Prevention, Volume 44, pp140-148.   **Date:** 2012 **Format:** Pdf   **Link:** http://www.sciencedirect.com/science/article/pii/S0001457510003829   **Free / priced:** $41.95
Objectives: • To review the literature concerning sustainable neighbourhood land use and transportation network patterns, increased VRU volumes, and road safety;   • To present empirical research results on road safety related to VRU volumes; and,   • To present emerging research regarding more sustainable land use and transportation patterns, increased VRU volumes, and road safety.
Methodology: Evaluation of the level of road safety relative to five neighbourhood patterns – grid, culs-de-sac, and Dutch Sustainable Road Safety (SRS) (or limited access), 3-way offset, and fused grid networks.
Key Findings: • Recent WHO and UN global declarations underscore the sense of urgency and frustration regarding progress to date regarding the unbearable social and economic burden of this problem. In the midst of this road safety 'epidemic', many governments are also pursuing more sustainable community development patterns to address climate change and non-renewable energy challenges.   • This drive to more sustainable land use and transportation may hold the key to global road safety improvement, as built environment directly influences the amount of auto dependence, even more so than socio-economic status. More sustainable built form, in terms of walking, bicycling, and transit-friendly neighbourhoods is expected to lead to reduced auto use, which in turn has been associated with reduced road RTIs.   • Recent comparisons of global VRU RTIs statistics suggest that, in addition to mixed land use density, the layout of neighbourhood roads plays a vital role in the encouragement of walkable, safe and quiet, yet accessible and sustainable communities.   • To test the road safety hypothesis, researchers evaluated the level of road safety relative to five neighbourhood patterns – grid, culs-de-sac, and Dutch Sustainable Road Safety (SRS) (or limited access), 3-way offset, and fused grid networks.   • Analysis using standard transportation planning methodology revealed that they would maintain both mobility and accessibility. Analysis using standard road safety analysis methodology further revealed that these 3-way offset, and fused grid patterns would significantly improve road safety levels by as much as 60 per cent compared to prevalent patterns (i.e. grid and culs-de-sac).
Themes: Land use, Neighbourhood, Sustainable.
Comments: Clearly shows that land use and road layout are important considerations in road safety management.

Title: Modelling the effects of land use and temporal factors on child pedestrian casualties	
Author / organisation: D. Dissanayake, J. Aryaijab, D.M.P. Wedagamac, Accident Analysis and Prevention, Volume 41, pp. 1016-1024. **Date:** 2009 **Format:** Pdf **Link:** http://www.sciencedirect.com/science/article/pii/S0001457509001419 **Free / priced:** $41.95	
Objectives: To investigate the relationship between land use and transport is used to establish a link between land use and child pedestrian travel; trip attractors and generators are considered as variables that lead child pedestrians to exposure to high risk environments.	
Methodology: Casualty records for Newcastle upon Tyne were analysed to reveal trends of temporal variation of child pedestrian casualty numbers. Land use data was combined with the casualty data using GIS techniques to generate relevant inputs for the analysis. Six Generalised Linear Models (GLMs) were developed to analyse the association of child pedestrian casualty numbers and trip attractor land use types.	
Key Findings:	

Key Findings:

- The results show that secondary retail and high density residential land use types are associated with all child pedestrian casualties. In addition, educational sites, junction density, primary retail and low density residential land use types are also associated with child casualties at different time periods of the day and week.
- All models predict that secondary retail is positively associated with child casualties.
- According to the results, high density land use is negatively associated with child pedestrian casualties. It predicts that according to the results, high density land use is negatively associated with child pedestrian casualties.
- The study findings are found to concur with the current child road safety policies in Great Britain and will, in fact, provide some guidance for local authorities to deliver successful child road safety audits.
- The study finds that the association of child pedestrian casualties to land use can reveal important linkages where underlying characteristics are likely to be causative factors of such casualties.

Themes: Land use, Child Pedestrians, Road safety audits.

Comments: Highlights the importance of considering land use in relation to road safety.

Title: Evaluating the road safety effects of a fuel cost increase measure by means of zonal crash prediction modelling
Author / organisation: A. Pirdavani, T. Brijs, T. Bellemans, B. Kochan, and G. Wets, Accident Analysis and Prevention, Volume 50, pp. 186-195. **Date:** 2013 **Format:** Pdf **Link:** http://www.sciencedirect.com/science/article/pii/S0001457512001418 **Free / priced:** $41.95
Objectives: To evaluate the traffic safety impact of conducting a fuel-cost increase scenario (i.e. increasing the fuel price by 20 per cent) in Flanders, Belgium.
Methodology: An activity-based transportation model framework was applied to produce exposure metrics. The RTI data used in this study consist of fatal and injury RTIs observed between 2004 and 2007.
Key Findings: - Travel demand management (TDM) consists of a variety of policy measures that affect the transportation system's effectiveness by changing travel behaviour. The primary objective to implement such TDM strategies is not to improve traffic safety, although their impact on traffic safety should not be neglected.   - For many years, researchers have attempted to investigate this impact by predicting the number of injury RTIs based on patterns they learned from RTIs that occurred in the past.   - The results show a considerable traffic safety benefit of conducting the fuel-cost increase scenario apart from its impact on the reduction of the total vehicle kilometres travelled (VKT). A 20 per cent increase in fuel price is predicted to reduce the annual VKT by 5.02 billion (11.57 per cent of the total annual VKT in Flanders), which causes the total number of injury RTIs to decline by 2.83 per cent.
Themes: TDM, Road safety, Model.
Comments: Useful information which highlights the importance of travel demand management.

Title: Road Safety Partnership Grant, 2007-09 Schemes: Headline Impact Report
Author / organisation: Department for Transport (DfT)
Date: 2009a   **Format:** Pdf   **Free / priced:** Free http://webarchive.nationalarchives.gov.uk/20110503225629/http://www.dft.gov.uk/pgr/roadsafety/rspg/impact_report.pdf
Objectives: To summarise the interim outcomes as of March 2009 and highlight key learning points from a selection of projects that benefited from the DfT funding in Round 1 of the Road Safety Partnership Grant (RSPG) scheme.
Methodology: Not applicable.

Key Findings:
 	
• The RSPG was launched in October 2006, providing funding to local highway authorities in England via an annual bidding process as a means to promote a collaborative and innovative approach to all aspects of delivering enhanced road safety. In particular, the RSPG aimed to encourage partnerships between traditional local authority road safety professionals and other internal partners, including the education sector and youth service, other public sector organisations, including the health sector, the fire service and the police, and the voluntary sector. In its first year, 27 projects were approved for delivery between 2007 and 2009.
 	
• Within the overall Road Safety Partnership Grant Scheme, some key learning points include the following:
  o Education, Training and Publicity and enforcement initiatives, which are well-targeted on high risk groups and use data effectively, can have substantial impacts reducing road deaths and serious injuries.
  o Close collaboration with partners has often been vital.
  o In some cases, participation by partner organisations was not as fully realised as originally envisaged (or promised). The importance of defining and then maintaining partner relationships and contribution throughout the project and beyond (whether financial or in-kind) was keenly felt.
  o In some areas there was a capacity (and in some cases, capability) gap within the local authority to be able to cope with the governance requirements of the overall grant scheme.
  o Notwithstanding effective scheme project planning, some larger-scale engineering projects found additional delays caused by utility networks negotiation, recruitment and local political scrutiny.
  o In a number of cases, the projects led to better co-operation between neighbouring authorities.
  o The funding scheme has enabled representatives of the DfT's Road Safety delivery team to forge strong relationships with a number of authorities through the administration of the project. This has enabled them to gather information and contacts within those authorities, and to facilitate contact between participating and non-participating local authorities facing similar issues.

Themes: Partnerships, Road Safety Partnership Grant, Learning points
Comments: Provides learning points.

Title: Road Safety Partnership Grant: Round One, 2007–09 Schemes – Summary Report
Author / organisation: Department for Transport
Date: 2009b **Format:** Pdf
Link: http://webarchive.nationalarchives.gov.uk/20110503225627/http://www.dft.gov.uk/pgr/roadsafety/rspg/round-one.pdf
Free / priced: Free
Objectives: Provide a summary of outcomes and highlights the key learning points from the projects which benefited from the Department for Transport Round 1 funding of the Road Safety Partnership Grant (RSPG) scheme.
Methodology: Not applicable.
Key Findings: - The Road Safety Partnership Grant (RSPG) scheme was launched in October 2006 and was introduced to supplement the specific Road Safety Grant, which supports some core road safety activities, and which was introduced in 2007. However, additionally, the RSPG was introduced to promote: - Partnership working among local authorities and others (internally including the education sector and youth service, other public-sector organisations, including the health sector, the fire and rescue service and the police, and the voluntary sector);   - The take-up and sharing of good practice in the road safety arena;   - Innovative approaches and ways of working to address road safety issues; and   - Mainstreaming the most effective lessons learned from recent road safety pilot projects.   - A total of 27 schemes in 25 local authorities were approved for delivering projects between 2007 and 2009, and they received a total of £4.6 million for RSPG Round 1.   - With some of the larger-scale projects in the RSPG Round 1, it was very difficult to give enough time to properly deal with the consultation, implementation, evaluation and lessons learned, within such a short time-scale. This was especially so in the case of some of the larger-scale engineering projects and what they intended to deliver and evaluate on in two years. Additionally, with many of the projects, it will be difficult to ascertain a true picture of whether or not the interventions have had a measurable impact upon casualty reduction until there has been sufficient data collection over the next two or three years.   - Evaluation plans, with tightly defined measures of success, were not, for the most part, thought about at the beginning of the process. We have learned from this and ensured that for RSPG Rounds 2 and 3, evaluation and measures of this have been intrinsic to the process from the very beginning of the project planning.
Themes: Partnerships, Funding, Effectiveness
Comments: Describes the RSPG Round 1 and some lessons learnt.

Title: Behavioural Change Techniques used in road safety interventions for young people	
Author / organisation: F. Fylan, S. Stradling	
Date: 2014 **Format:** Pdf	
Link: http://www.sciencedirect.com/science/article/pii/S1162908814000073	
Free / priced: Priced	
Objectives: Behavioural Change Techniques (BCTs) have been successfully deployed to change a range of different health behaviours. This study defines a series of BCTs that can be applied in the road safety setting and asks which ones are found in road safety interventions for young road users?	
Methodology: The authors classified twenty-six techniques identified as used in behavioural change interventions, plus one other adapted from forensic psychology. Common road safety interventions used with pre and young drivers were characterised according to the BCTs they employ.	
Key Findings:	

- Death and injury from road traffic is a public health problem worldwide and accordingly there is substantial interest and investment in developing interventions to change road user behaviour.
- Alongside this, there is growing awareness of the need to evaluate interventions and to identify the most effective mechanisms by which behaviour can be changed. Progress has been hindered due to a lack of a common taxonomy with which to define specific techniques used in attempts to change behaviour.
- Twenty-seven behavioural change techniques were classified into nine groupings. Six educational road safety interventions commonly used in the UK with pre-drivers and young, novice drivers were characterised in terms of the BCTs they employ.
- The study found that only a small subset of BCTs are employed in most of the interventions. They concentrate primarily on increasing awareness of the risks associated with a particular behaviour, and the severity of the potential adverse consequences.
- The study concludes that if road safety interventions are to achieve substantial and sustained change in behaviour they would benefit from being based more clearly on theoretical models of behaviour change and making use of BCTs that are congruent with the target behaviour.
- Developers of interventions should specify which BCTs they are using in both intervention manuals and evaluation reports. In this way, it will be possible to compile an evidence base on which BCTs achieve effective, long-term change and thereby contribute to reducing road casualties.

Themes: Evaluation, Intervention design, Effectiveness.	
Comments: Strong recommendations	

Title: European Commission Interim evaluation of the Policy orientations on road safety 2011-2020
Author / organisation: ETSC
Date: 2015a   **Format:** Pdf   **Free / priced:** Free   http://etsc.eu/wp-content/uploads/mtr_rspo_etsc_response_jul_2015.pdf
Objectives: To set out the key points and recommendations the European Commission make to reduce deaths and serious injury across the EU
Methodology: Not Applicable

Key Findings:
 	
 • The European Commission Staff Working document on EU road safety policy 2011-2020 recognises that the EU is the safest region world-wide. The EU targets for road deaths were an important driver for the dramatic reductions in countries such as Spain, Portugal, Lithuania, Latvia, Slovenia and Estonia, all of which have cut deaths by more than 60 per cent since 2001.
 	
 • However, ETSC's latest report reveals that 25,845 people were killed in 2014 in the EU28 as a consequence of road collisions, representing a decrease of only 0.6 per cent since 2013. The number of road deaths now has to be reduced by about 8 per cent each year until 2020 for the EU to reach its 2020 target.
 	
 • In 2014, more than 203,500 people were recorded by the police as seriously injured and the number of seriously injured grew by almost 3 per cent compared to 2013.
 	
 • As such, the European Commission Staff Working document makes a number of recommendations, including:
     o Adopt a target this year to reduce by 35 per cent between 2014 and 2020 the number of people seriously injured based on MAIS3+.
     o Adopt a fully-fledged joint strategy to tackle serious injuries, including measures against which delivery can be made accountable.
     o Support the exchange of best practice between Member States on how to report seriously injured road casualties as MAIS3+.
     o Install barriers, friendly to powered two-wheelers in areas susceptible to motorcycle collisions. Implement engineering measures to prevent pedestrians accessing motorways.
     o The use of co-operative ITS and Advanced Assistance Systems, including Intelligent Speed Assistance (ISA), alcohol interlocks, seat belt reminders and Autonomous Emergency Braking (AEB).
     o Encourage that, within urban transport planning, a clear hierarchy of transport users is adopted, with pedestrians and cyclists at the top of the hierarchy, amongst other recommendations directed at vulnerable road users.
     o Support Member States in preparing national enforcement plans with yearly targets for compliance in the areas of speeding, drink and drug driving and seat belt use.
     o EU funds should concentrate on the improvement of road safety through the application of known, effective, science based countermeasures targeting the most life-saving actions.

Themes: Leadership, Policy.
Comments: Action from the supranational level to reduce serious injuries.

Title: Enforcement in the EU – Vision 2020
Author / organisation: ETSC
Date: 2015 (b)   **Format:** Pdf   **Free / priced:** Free http://etsc.eu/wp-content/uploads/Enforcement-in-the-EU_Vision-2020_March-2015.pdf
Objectives: To set out the action the EU and the Member States need to take to achieve a high level of enforcement of traffic law to save lives across the EU by 2020.
Methodology: Not Applicable
Key Findings: - The European Commission adopted a new target to halve road deaths by 2020 and, in its Transport White Paper in 2001, a 'Vision Zero' for 2015. In order to achieve the 2020 target the EU will have to go above and beyond current reduction trends. Enforcement is a means to prevent collisions from happening by way of persuading drivers to comply with the safety rules.   - A number of recommendations were made, including: - Prepare enforcement plans with yearly targets for enforcement and compliance in the areas of speeding, drink and drug driving and seat belt use.   - Adopt a 'Zero Tolerance' approach to enforcing the three priority areas of road safety legislation.   - Ensure greater convergence in enforcement of road safety related road traffic rules and develop common minimum standards.   - To address speeding, the recommendations include: conducting mobile checks; using fixed cameras in places where speeding causes a high level of collisions; channel revenues from camera enforcement back into road safety work; collect speeding rates for all types of three times a year; improve enforcement of speeding of PTWs by improving number plate visibility and accuracy of speed detection; use average speed cameras in places where speeding over appreciable distances is a problem; incorporate speeding offences in penalty point systems, and make sure that levels of penalty escalate as the level of speeding above a speed limit increases; and monitor development of speed patterns (mean speed and 85 percentile) and publish regular overviews of change of different road users.   - To address drink driving, the recommendations include: introduce targeted breath testing to complement enforcement based on suspicion; intensify enforcement of drink driving laws by setting targets for minimum level of alcohol checks of the motorist population; introduce obligatory testing for alcohol in all collision dealt with by the Police and collect quarterly rates of drink driving and/or rates of traffic deaths from collisions involving drivers over the limit.   - Introduce random drugs testing with zero-tolerance approach for illicit drugs (testing for presence of a drug) with a blood/urine/saliva tester. Combine this with an impairment approach for other psychoactive substances.

	○ For seat belt wearing, the recommendations are to conduct intensive seat belt use actions of 1-4 weeks, which must take place at least twice a year and collect yearly seat belt wearing rates for the various road and occupant categories (driver, front and rear passengers)

Themes: Enforcement, Policy, Leadership

Comments: Actions required to achieve a high level of traffic law enforcement across the EU.

Title: Integration of Road Safety in Other Policy Areas: Synergies and Conflicts

Author / organisation: E. Townsend

Date: 2013   **Format:** Pdf   **Free / priced:** Free

http://etsc.eu/wp-content/uploads/2014/03/Integration_of_Road_Safety_in_Other_Policy_Areas_2013.pdf

Objectives: To look at what integration of road safety means in relation to several policy areas.

Methodology: Investigation of the synergies and conflicts of integrating road safety into other policy areas.

Key Findings:

- Integration of road safety into other policy areas can be understood as systematically taking the issues and mainstreaming it in other related fields of policy.
- It is argued that useful synergies can be created and achieved and certain objectives can be met through integrating safety into other areas, in line with the Safe System approach.
- For integration to achieve these benefits one needs to identify potential conflicts and look at ways to overcome them.
- Three key policy areas were examined in detail: employment, environment and health. These topics were chosen as they arguably have the strongest links to road safety policy.
- A longer list of other issues which represent a second tier of policy areas where there are clear links with road safety were also explored. These include trade and procurement, liveable cities, transport accessibility and equity, development co-operation, policing and tourism.
- Road safety policy integration can add strength in achieving joint objectives, pooling of resources and greater efficiency.
- Integration can also highlight conflicts where reaching one objective such as road safety, may have tensions for another.
- On balance, though, it is argued that through looking at possible synergies and also potential conflicts, the end result should emerge stronger for all involved.
- Integration should be an ongoing process which should be monitored and revised within a spirit of dialogue between representatives of different policy areas.

Themes: Integration, Policy, Leadership

Comments: Provides ways in which road safety can be integrated into other policy areas

Title: Evidence-based and data-driven road safety management	
Author / organisation: F. Wegman, H.Y. Berg, I. Cameron, C. Thompson, S. Siegrist, W. Weijermars	
Date: 2015 **Format:** Pdf **Free / priced:** Free **Link:** http://www.sciencedirect.com/science/article/pii/S038611121500014X	
Objectives: To explore the experiences of using an evidence-based and data-driven approach to road safety management.	
Methodology: To use four case studies to assess the effect on road safety management	

Key Findings:

- Over the past decades, road safety in highly-motorised countries has made significant progress. Although we have a fair understanding of the reasons for this progress, we don't have conclusive evidence for this. A new generation of road safety management approaches has entered road safety, starting when countries decided to guide themselves by setting quantitative targets (e.g. 50 per cent fewer casualties in ten years' time).
- The experiences of four jurisdictions (Western Australia, the Netherlands, Sweden and Switzerland) were examined to understand how road safety management is approached.
- Setting realistic targets, designing road safety strategies and action plans to achieve these targets and monitoring progress have resulted in more scientific research to support decision-making and improved the quality of decisions.
- Ex-post and ex-ante evaluations are critical to further underpin road safety management decisions.
- Transferability of research results in road safety (external validity) deserves further research.
- High-quality road safety data and statistics are essential for road safety management.
- As road safety research and road safety management become more international, it is recommended to pay attention to the harmonisation of definitions and data collection procedures. This will allow for better international comparison and, as a consequence, for facilitating the jurisdictions in learning from each other. Three areas deserve special attention:
  - Estimation of costs – the need for standardisation of the format of the cost estimates of the socioeconomic impact of road crashes
  - Measuring exposure (to risk) – allowing it to be made clear if changes in casualties are due to lower exposure or lower risk.
  - Including high-quality data on (serious) injuries, next to estimates on crash fatalities – linking hospital and police data to increase the quality of injury data and quantifying under-reporting.
- Clear indications that decision makers are willing to accept results from scientific research were found.

Themes: Road safety management, Evidence, Policy, Leadership

Comments: Looking at international best practice on improving the quality of road safety management approaches

Title: Needs and priorities of road safety stakeholders for evidence-based policy making
Author / organisation: E. Papadimitriou, G. Yannis
Date: 2014 **Format:** Pdf **Link:** http://www.sciencedirect.com/science/article/pii/S0967070X14001279 **Free / priced:** Priced
Objectives: To analyse the needs and priorities of road safety stakeholders for evidence-based policy making.
Methodology: A broad consultation of road safety stakeholders at the international level, using an online survey to more than 3,000 respondents
Key Findings: - An online survey was addressed to more than 3,000 stakeholders, mostly from European countries, in which participants were asked to assess the importance (high, medium or low priority) of more than 50 items reflecting data and resources for all stages of road safety policy making – from fact-finding and diagnosis, to programme development, to implementation and monitoring/evaluation.   - A principal component analysis technique was applied, and 6 components of data and tools were identified, concerning implementation of measures, statistical models, costs and safety impacts of measures, road infrastructure and collision analysis, common definitions and under-reporting, and crash causation.   - Four groups of stakeholders with similar needs and priorities in road safety data and tools were identified: a "low priorities" group; a "need data and models group"; a group mainly interested on "implementation"; and an "in-depth analysis" group.   - The study found that national/regional administrations and research institutes/universities reported practically the same needs in data and tools, not confirming the common belief that these two types of stakeholder have different needs.   - A global framework of data and information, supportive of all stages of road safety analysis and policymaking is required for reliable analysis and science-based decision making.   - These findings may be exploited for the future enhancement of the European Road Safety Observatory, for priority setting in short and long-term research and data collection activities and for dealing with current gaps between needs and availability of data and tools.
Themes: Data, Policy-Making, Evidence
Comments: Provides an understanding of the data needs of stakeholders

Title: Making knowledge exchange between theory and practice a reality: a practical model to enhance road casualty reduction on a decreasing budget
Author / organisation: L. Hurst, L. Hellier, P. Husband
Date: 2014 **Format:** Pdf   **Link:** https://www.saferroads.co.nz/wp-content/uploads/2016/02/Hurst_Laura_102_V1_2014113-Making-knowledge-exchange-between-theory-and-practice-a-reality.pdf
Free / priced: Free (Password required)
Objectives: To use evidence-based practice to guide road casualty reduction.
Methodology: Case study of Cornwall Council
Key Findings: • In the UK, there is a statutory requirement on local government to aid road casualty reduction. While Cornwall Council was successful in reaching their 2010 casualty reduction targets, it had no evidence to suggest which initiatives contributed to this achievement and which did not.   • Much of the research in traffic psychology is unused in road safety, and much 'best practice' in road safety is based on intuition rather than evidence. Cornwall Council recognised an evidence-based approach was required to meet future targets and ensure interventions were gaining the best possible return on investment.   • There is a framework within the UK for partnership between business and academia known as 'Knowledge Transfer Partnership' (KTP). The KTP is a government funded project that puts a recent graduate in the workplace with supervision from their employer and a university.   • Cornwall Council used this mechanism to embed and evidence-based practice (EBP) into road casualty reduction. The approach begins with case studies of priority risk groups. The research and collision data is critically appraised and an understanding of the implications for road safety interventions, in terms of relative need and effectiveness, is developed. Change management groups are formed with road safety practitioners, engineers, and police where recommendations from the research can be embedded in practice. The groups allow evidence to be communicated effectively from researcher to practitioner, allowing a sustainable, affordable mechanism for bridging the gap between theory and practice.   • EBP is a 'practice supported by clear, up-to-date rationale, taking into account clients' preferences and using your own judgement'. EBP requires three aspects: professional judgement, client preference and research evidence.   • The results demonstrate a practical model for enhancing road casualty reduction performance on a decreasing budget. By implementing and embedding EBP, resource can be prioritised on the areas most at risk and the areas that are going to produce the best value for money.
Themes: Road safety management, Evidence, Effectiveness
Comments: A practical example of how to incorporate evidence based practice into road safety management.

Title: Vision Zero – a road safety policy innovation
Author / organisation: M.A. Belin, P. Tillgren, E. Vedung
Date: 2012 **Format:** Pdf
Link: http://www.tandfonline.com/doi/abs/10.1080/17457300.2011.635213
Free / priced: Free
Objectives: To examine Sweden's Vision Zero
Methodology: Analysis of how safety issues were framed, which decisions were made, and what are the distinctive features of Vision Zero.
Key Findings: - Vision Zero as a road safety policy, adopted by the Swedish Parliament, represents an innovative and radical approach to the promotion of an alternative framework in Sweden with regard to road safety problem formulation, views on responsibility, attitudes to the demands of road users for safety, and the ultimate objective of road safety work.   - Although some promising results have been reported, there is a need for a comprehensive assessment of the implementation and outcomes of Vision Zero policy. The paper has demonstrated that behind the commonly cited low road safety fatality in Sweden and road safety policy, lies a long tradition of systematic road safety work that has involved the taking of key political decisions by the Government and Parliament.   - Vision Zero entails a shift in the road safety planning paradigm. Instead of starting from an existing problem situation, Vision Zero departs from an absolute state of the future – safe road traffic.   - As a policy, Vision Zero requires a planning model that involves what is called – 'back-casting'. In this way, Vision Zero is not only a long-term goal but also a means for driving the development of new measures and new approaches that may be both less expensive and more effective than those available today.   - The goal of the global plan in the Decade of Action for Road Safety of stabilising, and then reducing, the forecast level of road traffic fatalities around the world by 2020 requires radical alternatives to those entailed by the traditional approach to road safety. This goal may not be achieved if the approach is 'business as usual' with regard to the implementation of effective road safety measures.
Themes: Road safety management, Effectiveness, Evidence, Policy
Comments: An alternative approach to road safety policy

Title: Demonstrating a Correlation between the Maturity of Road Safety Practices and Road Safety Incidents	
Author / organisation: L. Amador, C.J. Willis	
Date: 2014 **Format:** Pdf	
Link: http://www.tandfonline.com/doi/abs/10.1080/15389588.2013.845753	
Free / priced: Priced	
Objectives: To demonstrate a correlation between the maturity of a country's road safety practices and road safety incidents	
Methodology: Data on a number of road injuries and fatalities for 129 countries were extracted from the United Nations Global Status on Road Safety database. These data were subdivided according to road safety incident and crash causation factors and normalised based on vehicular fleet (per 1,000 vehicles) and road network (per metre of paved road). A road safety maturity model was developed based on an adaptation of the concept of process maturity modelling. Plots of normalised road safety performance of the 129 countries against their maturity scores for each road safety practices as well as an aggregation of the road safety practices were developed.	

Key Findings:

- The maturity of countries with respect to 10 road safety practices was determined through the identification of indicators recorded in the United Nations Global Status of Road Safety Database.
- The analysis confirmed that there is a correlation between the maturity of road safety practices and road safety incidents.
- Road safety practices associated with enforcement of speed limits and promotion of alternative modes are the most significant road safety practices toward which mature countries have concentrated their efforts, resulting in a lower frequency of fatalities, injury rates, and property damage collisions.
- The report argue that the use of gross domestic product (GDP) as a predictor of road safety incidents suffers from the presumptive assumption that the only criterion that matters is national income, therefore erroneously predicting that richer countries all perform approximately the same in fatalities and that developing nations are at various stages, with high variability and uncertainty in prediction.
- It is proposed that an aggregation of individual maturity scores from safety practices will lead to a better indicator for policy because it connects fatalities/injuries with intrinsic factors for which policies can be oriented.

Themes: Policy, Effectiveness
Comments: Different approach to understanding effectiveness of road safety policies across a large number of countries.

Title: Road Safety Since 2010
Author / organisation: L. Amos, D. Davies, T. Fosdick
Date: 2015 **Format:** Pdf **Link:** http://www.pacts.org.uk/2015/09/road-safety-since-2010-a-report-with-the-rac-foundation/ **Free / priced:** Free
Objectives: To summarise the development of road safety strategy and its implementation and outcomes since 2010 to provide an evidence base for the incoming Conservative Government which will need to draw up a new road safety strategy and action plan.
Methodology: Literature review, workshops with stakeholders and a survey of local authorities in England.
Key Findings: - There is now far greater diversity in road safety strategy across the UK. The devolved administrations in Northern Ireland, Scotland and London have been more ambitious and appear to have co-ordinated their road safety agenda across national, regional and local levels.   - The absence of national road casualty reduction targets for England and Great Britain is seen as a key reason for a lack of focus on road safety at the local level within England, which has had negative consequences in terms of priority, resources and operational capacity.   - The sudden introduction of localism to local authorities in England, unaccompanied by appropriate guidance or adequate resources, has led to reduced funding and a loss of experience, resources and manpower in road safety. While community expectations of delivery have risen, operational capacity has fallen.   - Local road safety partnerships, which were previously an area of positive development in road safety efforts, suffered significantly in the early part of this period. There are signs that road safety partnerships are now regaining their capacity as a result of NDORS (the National Driver Offender Retraining Scheme) funding.   - Joined-up working that links public health, sustainable transport and other sectors is welcomed by local road safety practitioners, but these arrangements are still bedding down, and effectiveness so far has proved variable.   - UK Government road safety policies have focused on education and enforcement. The Department for Transport has completed its Road Safety Action Plan, which included some significant safety measures, such as legislation on drug-driving. However, stakeholders have questioned the impacts in the light of reductions in roads policing prioritisation and manpower. Some actions were shelved, notably the young driver Green Paper.   - While central government research has been cut back, positive developments have occurred in terms of research and technology within the private and third sectors.
Themes: Policy, Effectiveness, Road safety management, Funding
Comments: Evidence from road safety stakeholders and practitioners on current road safety management and policy