

MAKING BIKE SAFETY RESEARCH COUNT

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ABSTRACT

For research to positively impact road users' safety, findings must be effectively communicated and used to advocate policy implementation or change. Institutions concerned with road safety need to collect, review and facilitate research in a rigorous, systematic way. The alternative, relying on ad hoc discovery of research, runs the risk of promulgating untested, unworkable, counterproductive or ineffective policy. The Amy Gillett Foundation (AGF) has developed a systematic policy development approach that identifies issues that have a bearing on its mission: safe cycling in Australia, and its vision: zero bike-related fatalities. Policy developed at the AGF is underpinned by the theoretical models of Haddon's matrix, the Safe System Framework and the Public Health Approach to identify policy issues and provide structure for policy development and prioritising. Relevant research is parsed to identify possible positions on an issue; draft policy is then enunciated, refined by the AGF Research and Policy Advisory Committee and then communicated to advocates as relevant for support or change regarding existing policy. This paper identifies examples of this process in action regarding two policy issues: safe overtaking distances and cyclist-open vehicle door crashes.

Keywords: *Cyclist, Safety, Bicycle, Knowledge translation, Advocacy*

1. INTRODUCTION

The Amy Gillett Foundation (AGF) is a not for profit organisation legally created in 2006. It is unusual for a road safety organisation in that it has deductible gift recipient status. This was gained through recognition by the Federal Government of the importance of a community organisation that focused on the reduction of road crashes involving bicycle riders.

The AGF was established in 2006 and named in honour of Amy Gillett (née Safe). Amy had been an Australian Olympic rower (1996 Olympics) and she was training for selection in the Australian cycling team for the Beijing Olympics. In July 2005, Amy was on a pre-race reconnaissance ride in Germany with her Australian Institute of Sport cycling team when a young driver lost control of her vehicle and crashed into the team. Amy, 29 years of age, was killed instantly and her five team mates suffered extensive serious injuries.

The vision of the AGF is to eliminate all cycling-related deaths and serious injuries. While the powerful story of Amy and her teammates allows the AGF to communicate the pain of fatal road crashes, this story is just the very tip of the 'cyclist injury iceberg'.

Sizing the problem

The popularity of cycling in Australia has increased over the past decade. A recent survey reported that 4 million Australians (18%) cycle in a typical week, with 1.6 million using their bike for transport. However, there are significant gaps in our understanding of cycling participation as there have been few systematic reports of the number of people who cycle or their trip details (e.g. trip distance, time riding).

Over the past decade, there has been an average of 37 cyclist fatalities per year, which comprises 3 per cent of the total road toll (Bureau of Infrastructure Transport and Regional Economics 2011) and cyclist serious injuries are 17.8 per cent of all serious injuries (Henley and Harrison 2009). However, cyclist injury crashes are grossly underreported to police (Harman 2007; Sikic, Mikocka-Walus et al. 2009). A recent ACT study of hospital admissions reported that only 11.2% of all cyclist crashes (17.3% of crashes in transport environments) were reported to the police with crashes involving motor vehicles most likely to be reported (71.4%). In comparison, none of the cyclist-pedestrian crashes, only 5.3% of crashes involving other cyclists, and 2.9% of single vehicle crashes were reported (De Rome, Boufous et al. 2011). Little is known about the incidence of less serious injuries (Heesch et al 2011).

Given the lack of participation data and the underreporting of cyclist injury crashes, it is difficult to determine the magnitude of cyclist road trauma with any precision. This lack of data highlights the neglect in Australia of cyclist-focused monitoring that is essential to understanding injury rates and factors that contribute to cyclist crashes.

Investing in safe bicycle use

Internationally, there are extensive examples of how to create a safe cycling environment. Infrastructure, both on-road and off-road, has been fundamental to increasing cycling participation and reducing cyclist injury crashes (Pucher and Dijkstra 2000; Dill and Carr 2003; Bauman, Rissel et al. 2008; Pucher, Dill et al. 2010). Broad, societal benefits flow on from a safe cycling environment, including benefits for individual health, public health, reduced traffic congestion and benefits to the environment (Dill and Carr 2003; Garrard 2012).

In Australia, cycling facilities are primarily on-road bike lanes with segregated infrastructure separating bicycles and vehicles in a small number of inner-city locations. Cyclist safety is not well incorporated in road design in Australia and investment in safety is often in response to crash events (Daff and Barton 2005). For cyclists, this retrospective approach can often lead to compromises as vehicular travel is prioritised above continuous cycling facilities. This approach is further hampered by fluctuating government funding, for example the state government of Victoria recently almost halved their investment in cycling infrastructure projects (Garrard 2012; Sexton 2012).

However, beyond cycling infrastructure, there are a wide range of issues and concerns that directly affect the safety of cyclists. For example, *safe road user* behaviour is a key component of the Safe System Framework, yet there is little attention given to the role of unsafe driver behaviour in cyclist safety, such as overtaking cyclists too closely, causing a hazard by opening a vehicle door into a cyclist's path (also vehicle occupants opening doors) and turning left in front of cyclists.

Yet there appears to be a systemic inertia in addressing these issues in Australia. The AGF is seeking to overcome this inertia by identifying countermeasures to improve cycling safety. One of the aims of the AGF is to overcome unnecessary roadblocks to safety investment through promotion of evidence-based interventions, or innovative interventions accompanied by appropriate evaluation research. The approach taken by the AGF has been informed by the doctoral research undertaken by its inaugural PhD scholarship holder (Johnson 2011). The literature review and original research findings provided a starting point for the organisation to identify policy areas and prioritise its activities.

This paper provides an overview of the AGF processes of policy issue identification and policy development. The AGF policy process is three-fold: 1) identification of policy issues using theoretical frameworks relevant to road safety, 2) critical review of published literature, and; 3) the integration of public discourse.

2. POLICY IDENTIFICATION – PROACTIVE AND REACTIVE

The AGF has developed two approaches to safety policy definition and promulgation. The first of these approaches is systematic and proactive; the second is opportunistic and reactive. The reasons for these different approaches arise due to the many complexities of public debate and the multitude of people and institutions involved in decision-making that affect road safety.

2.1 Policy identification – proactive

The systematic and proactive approach begins with identification of existing issues that directly affect cyclist safety. Numerous cyclist safety issues were identified in the doctoral research program and beyond this, three theoretical approaches were used to ensure issues were comprehensively identified.

Theoretical approaches

The AGF utilises three theoretical approaches when identifying cyclist safety issues: Haddon's matrix, the Safe System Framework and the Public Health Approach. These are discussed in turn below.

Haddon's Matrix

In injury prevention, the need for a systematic, scientific understanding of injuries was first identified in 1949, (Gordon 1949), however it was Haddon, in his landmark paper of 1968, who presented a three stage matrix for identifying major components of an injury. Haddon refined the matrix in 1972 by adding the social environment (Figure 1)(Haddon 1968; Haddon 1972). A benefit of the matrix is that it facilitates an interdisciplinary approach to an issue by identifying a range of potential risk and protection factors across the various time phases (Runyan, 2003).

The AGF uses Haddon's matrix to systematically consider all stages of crash events across time (pre-crash, crash, post-crash) and characteristics (host, agent, physical environment, social environment). Examples of policy issues identified and their relationship to Haddon's matrix include: drivers allowing at least one metre when overtaking a cyclist (pre-crash);

support of the current helmet use legislation (crash), and; support for cyclist insurance (post-crash).

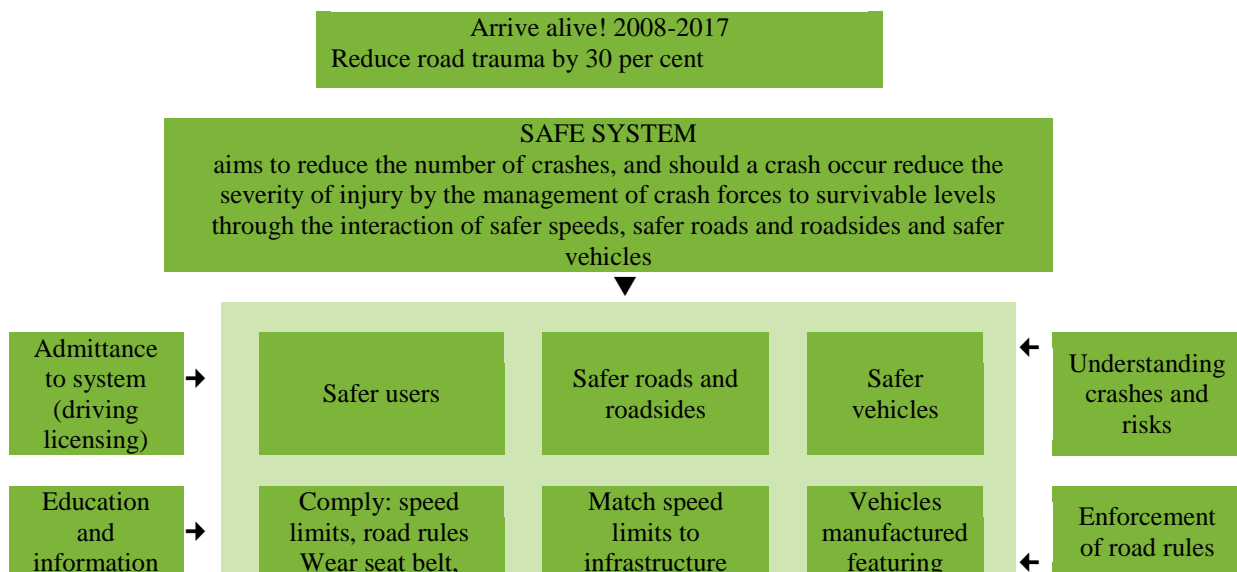
	Human/Host	Agent/Vehicle	Physical environment	Social environment
Time ↓ Pre-crash – crash prevention				
Crash – minimising injury severity				
Post-crash – minimising effect after a crash				

Figure 1: Haddon’s Matrix

Despite the widespread use of Haddon’s matrix in injury prevention, particularly addressing road injuries (Guarnieri, 1992; Runyan, 1998, 2003; Barnett, Balicer, Blodgett, Fewes, Parker et al., 2005; Eddleston, Buckley, Gunnell, Dawson & Konradsen, 2006), the road safety measures continued to focus on changing road user behaviour (Larsson, Dekker & Tingvall, 2010).

Safe System Framework

In road safety, the first, formal shift away from the traditional focus on changing road user behaviour was in the 1990s with two European policies, the Dutch Sustainable Safety (1992) and the Swedish Vision Zero (1997). In Australia, this shift occurred in 2004 with the national adoption of the Safe System Framework which was influenced by the European policies (Mooren, Grzebieta et al. 2011). The AGF has adopted the Safe System Framework for two reasons: firstly; it is a reasonably comprehensive framework for identifying issues affecting safety related to riding bikes on the road; and, secondly, it ensures that the AGF activities can be mapped to the principal strategy approaches used in Federal and State road safety efforts (see National Road Safety Strategy review - (SCOT Standing Committee on Transport 2010). Increasingly, safer speeds is being emphasised as a key component, the AGF acknowledges the importance of speed and includes speed as an independent component in policy development. The Safe System Framework is illustrated in Figure 2.



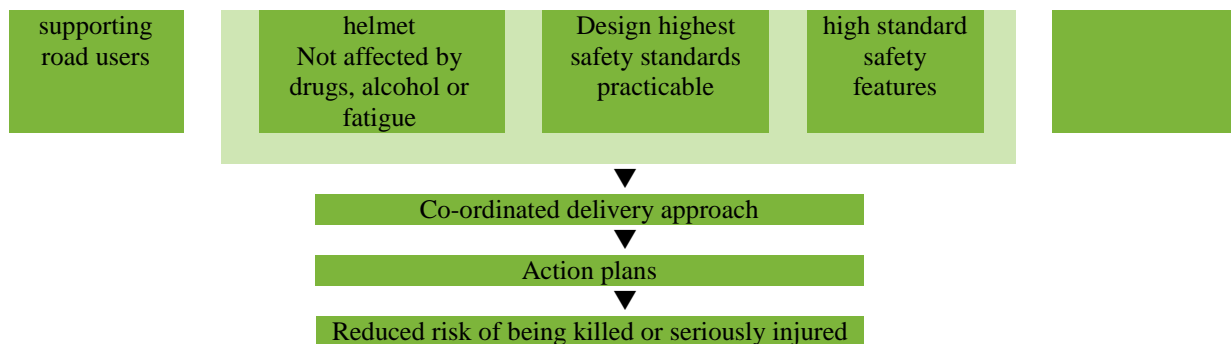


Figure 2 The Safe System framework: Adapted from VicRoads, 2008

Public Health Approach

Despite the benefits of Haddon’s matrix and the Safe System Framework, the primary weakness of both approaches is the lack of a systematic action plan. To address this, the AGF policy development process combines Haddon’s matrix and the SSF with the Public Health Approach (PHA). The PHA has a hierarchy of four stages: surveillance, risk factor identification, intervention evaluation and program implementation (Figure 3).

Originally developed for use with injury and violence, the approach identifies that a scientific methodology is essential to ensure that implemented programs are based on data and risk analysis (Lett, Oobusingye et al. 2002).

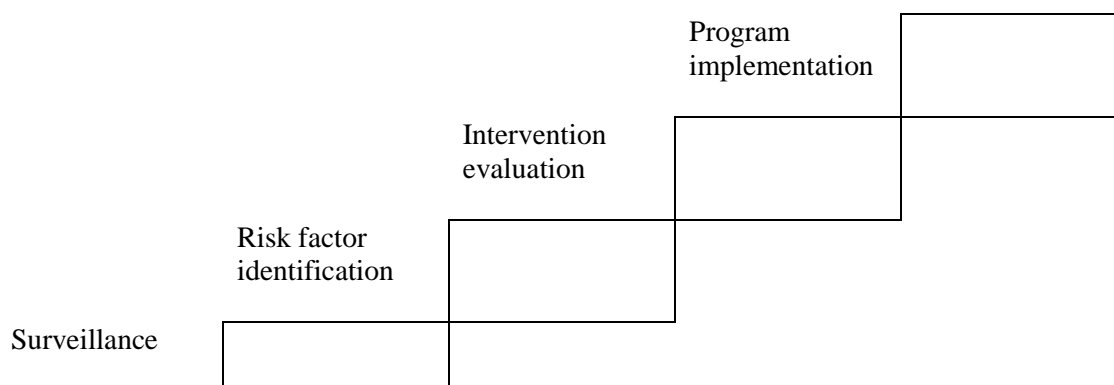


Figure 3 Public Health Approach, adapted from Lett et al, 2002

The four stages of the PHA ensure that the processes used to address the issues include community policy interventions, a systematic approach, data collection and intervention evaluation (Lett, Oobusingye et al. 2002).

The use of these three theoretical approaches enables the AGF to systematically explore cyclist safety issues and determine the action to be taken. This approach ensures a comprehensive approach to identifying policy issues. Some of the policy issues that have been identified using this approach in addition to those mentioned above, include: safe bunch riding behaviour; default responsibility; safer urban speed limit; distraction; licensing and registration; conspicuity and high visibility; driver behaviour, and; cyclist/bike detection technology.

However, there are limitations to this approach as it is reliant on the important issues having been identified and rigorously investigated in the published literature. Further, factors other than research outcomes alone influence government investment and policy development. In recognition of these broader factors, the AGF also engages in a reactive process of policy issue identification.

2.2 Policy identification – reactive

The rational decision-making model underpins much economics and other social behaviour theory. However, people often assess risk based on feelings of fear and anxiety (Lowenstein, Weber et al. 2001). It is speculated that feelings provide powerful meta-summaries of the vast amount of knowledge that people accumulate, consciously and unconsciously, about their environment (Pham, Lee et al. 2012). Recognising this, the AGF consciously places a high value on assessing community feelings and, where it can, seeking to influence them for a better safety outcome. That said, public debate follows an extremely complex and unpredictable course. The media respond to incidents, such as recognition of a particular crash, and policy announcements by government or NGOs. But how the reporting is assimilated into people's emotional states, choices and behaviour is extremely difficult to understand let alone predict.

Theory into practice – the role of public debate

It is axiomatic that public debate influences decision-making in road safety. Decision-makers can be influenced by debates in the media, lobbyists, their own individual experience of travel mode and route as well as senior bureaucrats, government representatives and the political process. The various processes involved in thinking about safety are often caught up in non-rational cognitive processes and people often engage in discussion based on an emotional response (Kahneman, Lovallo et al. 2011).

Public debate around road safety includes traditional media; newspapers, radio, as well as online discussion including blogs, newsgroups and social media. Other opportunities for promoting bicycle safety debate include: public events such as mass bike rides (community or competitive), car events (shows, race meetings etc); and publicity associated with changes in physical road environments, such as implementation of green lanes or other noticeable physical changes to the road environment.

It is unfortunate that in public debate, research evidence with appropriately qualified conclusions is often overlooked in favour of anecdotes. A key role of the AGF is to identify ways to redress cognitive biases among the public and policy makers. In some cases, this will require questioning assumptions about how risk and safety is assessed and how budgets should be spent.

Case studies in public debate

Single events have the power to influence public debate on cyclist safety and potentially government policy and legislation. This is evidenced by two recent examples that illustrate the power of a single crash to effect change, and the role of the media in how cyclist safety issues are portrayed.

The first example is the renewed public debate and action taken related to the danger to cyclists of unexpectedly opened vehicle doors following the death of James Cross, aged 22 years. The fatal crash occurred when a driver opened her door into James' path, he struck the door, fell from his bike and was hit by a truck in the adjacent lane (Spooner 2011). There was extensive media coverage of this crash in the print media (Langmaid 2011; Power 2011; Cooper 2012) and online (Johnson 2012) and cycling groups successfully lobbied the state government to reinstate a side mirror sticker campaign reminding drivers to look for cyclists. Further, an amendment to the road rules was submitted to the State Parliament to increase the penalties to vehicle occupants who cause a hazard to a cyclist by opening a vehicle door.

The second example from Canberra directly involves the activities of the AGF. The AGF, in conjunction with Pedal Power ACT Inc., ran a community bike ride in March 2012. Safety and sharing the road, including *A metre matters* were the messages promoted as part of the ride and were reported in a series of stories in the local media. One editorial in the Canberra Times promoted separated provision for bike riders. The published letters in response incorporated a wide range of views, including the disturbing views of one Canberran, with the extract below suggesting that efforts to humanise people riding bikes have failed for some in the community:

"...Cyclists are "pedal pests" and simply a people powered version of the motorcycle rider - long known as "temporary Australians" - and are a menace for motorists who have enough to cope with. As parents we instil (sic) into our children the value of riding their bikes on the footpath and around the local parks etc and staying right off the road. Now for some reason these pedal pests seem to defy all safety logic and expect the community to wear it. As for this nonsense of a proposed 1 metre separation between car and bike, this is just silly. If cyclists want to get serious (about safely cycling) then agitate for more bicycle paths and use them."

Michael Doyle – Fraser (Doyle 2012)

These examples illustrate that opportunities to engage in public debate aimed at improving cycling safety and the development of AGF policy can be both proactive and reactive, with outcomes ranging from beneficial to possibly counterproductive. Regardless of the approach taken to identify the policy issue, the AGF has developed a systematic process and strategic approach to developing policy.

3. POLICY DEVELOPMENT – A SYSTEMATIC APPROACH

Responsibility for policy development within the AGF rests with the Research and Policy Advisory Committee. The Research and Policy Advisory Committee works in parallel with the Marketing and Communications Advisory Committee, which tracks public opinion on road safety issues relevant to the AGF and develops communications campaigns.

The AGF Research and Policy Advisory Committee is comprised of bicycle and road safety experts from a range of backgrounds and disciplines including engineering, behavioural sciences, public health, policy development, and marketing and communications. In the first instance, committee members nominate the policy issues they will take carriage of and the policy development process begins with members completing a comprehensive template that includes: a review of the existing literature both scientific peer-reviewed literature and the

‘grey’ literature (e.g. academic, government and NGO reports), costs/benefits of the policy, strengths/weaknesses, key stakeholders, community involvement etc. This information is then circulated to the committee members and discussed in a workshop meeting to develop the policy position.

While the current approach utilises the wide ranging expertise of the committee members, the process is internal to the AGF. The AGF recognises the value of inviting public contributions to the policy identification and policy development processes, and the following section outlines plans for facilitating public input.

4. PUBLIC INPUT ON AGF POLICIES

Currently in the development stage, a future step as part of the AGF policy development process is to invite comment on the policies under development and feedback on issues of concern in the community. Using a type of ‘wiki’ format, which allows interested contributors to post a comment on a specific policy issue, the AGF will use the internet as a platform to better understand community sentiment and tap into community expertise about a specific issue.

This democratising of policy identification and development offers great promise of tapping into community attitudes and expertise about a specific issue, and individuals would be encouraged to provide critical comment on AGF content (Coleman and Götze 2001). It is anticipated that this forum will provide individuals with the freedom of anonymity to provide open and frank comments about the AGF policy being developed.

However, the AGF is also cognisant of the self-selection nature of individuals who choose to participate in online forums (Witschge 2004). The AGF is currently developing an online space that encourages engagement by all sections of the community.

5. CONCLUSION

This paper presents the current approach for the identification and development of cyclist safety policies at the Amy Gillett Foundation. Issues that impact on cyclist safety are complex and multi-faceted and will not all be addressed with a single countermeasure. In recognition of this, the AGF has carefully developed a comprehensive approach to policy identification and development that incorporates the existing scientific literature within theoretical frameworks.

The AGF is concentrating its activities on areas where it can have a direct influence. These generally lie at the intersection of research, public discussion and communication of the need for behaviour change. AGF also has a role in influencing the activities of other institutions. This includes communication of the scale of the problem of safety involving bicycle riders and identifying infrastructure and vehicle modifications that affect cyclist safety. Indirect influence is achieved through submissions to major reviews such as the National Road Safety Strategy and the Australian Road Rules. Bringing a vulnerable road user perspective to these reviews is particularly important given the paucity of these viewpoints in most road authority strategic development. Direct influence is achieved through involvement as; a stakeholder in Government lead road safety initiatives, parliamentary and coronial inquiries, and delivering cyclist safety projects on behalf of other organisations including government.

Future integration of community attitudes through specialised technology and social media will provide an opportunity for policies to be critiqued and for additional cyclist safety issues to be identified for policy development.

6. ACKNOWLEDGEMENTS

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