

Road safety in the 21st century –public expectations of government

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25th WESTMINSTER LECTURE ON TRANSPORT SAFETY & 4th LECTURE IN THE UN DECADE OF ACTION

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Introduction

We now know a lot about road safety and how it is produced. We can drill down deep into the road safety management system with a scientific understanding of what works and what doesn't. We all contribute to an industry that has been successful in high-income countries for more than four decades, an industry that has delivered huge benefits to society over this period on a continual basis, and an industry that has globally been led by developments here in the United Kingdom.

There is much to celebrate, yet looking forward as road safety professionals we have some cause for apprehension. To restate the researchers' lament:

We don't know enough, and we don't do enough with what we know.

I will be speaking this evening from the perspectives of my strategic management role in what was a poorly performing high-income country, New Zealand, and my World Bank advisory role in low and middle-income countries suffering the escalating costs of road crash trauma as they rapidly motorise. I will also be drawing on experience at Monash University with the delivery of road safety management leadership programmes, which brings us closer to day-to-day and longer-term challenges that road safety executives and leaders are facing in their changing organisational environments.

This will not be a scientific lecture, but more of a global reflection on where we have come from and where we are heading. My road safety observations will be confined to selected developments and examples illustrating the points I wish to make, rather than providing a comprehensive review.

I will not assess road safety in the United Kingdom in any depth, as you know this far better than me, but I will present views that are relevant to your strategic situation. Comparative data make it clear that the United Kingdom is a world leader in road safety performance, one of the 'SUNflower' countries that we have learned so much from.¹ Your historical success is taken as given and helps inform the views presented.

Lecture topic

I have been asked to speak on road safety in the 21st century and public expectations of government. This topic raises challenging, cross-disciplinary issues, depending

¹ Koornstra M et al. (2002). *SUNflower: a comparative study of the development of road safety in Sweden, the United Kingdom, and the Netherlands*. SWOV, Dutch Institute for Road Safety Research, Leidschendam.

upon how you view through a public lens the emergence of the modern state, its bio-political formations and its exercise of power.

For the purposes of brevity some simple definitions are necessary:

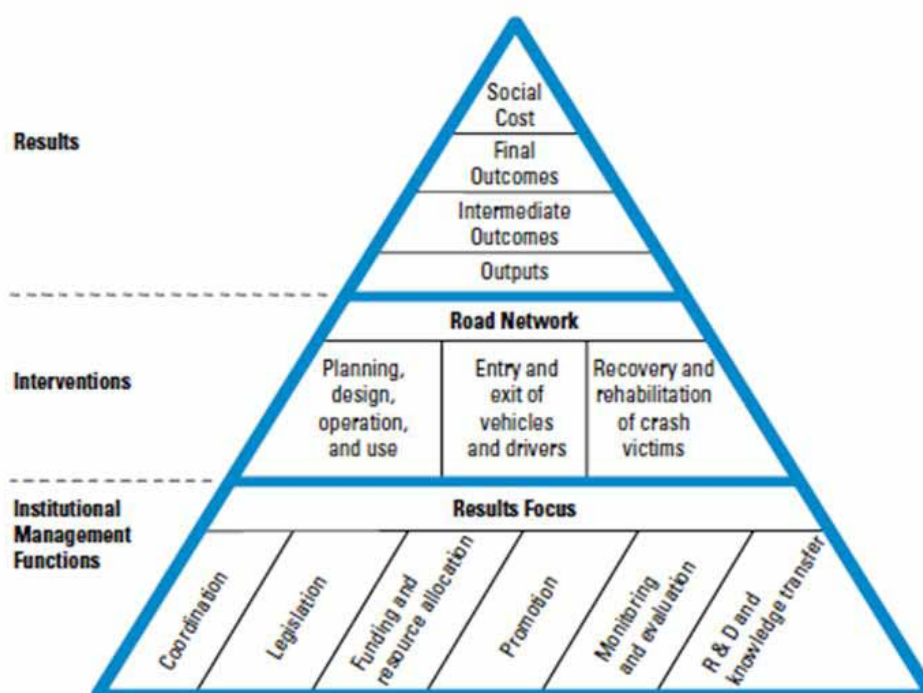
I will take 'public' to mean many publics with different voices – as many as there are contestable issues and concerns addressing road safety – including the public voice of industry and business.

My focus will be more on government at the national and state level. I will take 'government' to mean the government of the day and its agencies and agents, plus, importantly, the government in opposition, the vital ingredient in all effective democracies.

Public 'expectations' will concern government's overarching responsibilities for the efficient, effective and equitable delivery of the road safety management system. These responsibilities occupy a complex and shifting space, although core management functions remain clear and fundamental.

The limits to road safety performance are determined by jurisdictional implementation capacity and technical production frontiers, with the former constraining the latter. Three distinctive elements must be considered in the management system: institutional management functions, which produce interventions, which in turn produce results.

Road safety management system



Source: Bliss and Breen, building on the frameworks of Land Transport Safety Authority, 2000; Wegman, 2001; Koornstra et al, 2002; Bliss, 2004.

First and foremost, government sets the desired focus on safety results. Interventions implemented to achieve these span the planning, design, operation and use of the road network; the entry and exit of vehicles, drivers and operators to and from the network; and the recovery of crash victims from the network and their emergency care and longer-term rehabilitation.

Government also ensures that its agencies and agents have sufficient capacity to deliver or support the implementation of these interventions. Key agency management functions address coordination, legislation, funding and resource allocation, promotion, monitoring and evaluation, and research and development and knowledge transfer.²

While this system complexity is rarely acknowledged in public debate, which tends to focus on best practice interventions alone, implicit expectations are that the system will be managed transparently and fairly, with the default option for responsibility and accountability being the government. As we look into the near future we will see the growing significance of these expectations.

What's new in the 21st century?

To set the scene my lecture will first address what's new in the 21st century.

Powerful global forces are surfacing and reshaping the road safety narrative and five transformative developments will be highlighted:

- Road safety as a global priority;
- The *Safe System* approach;
- Converging technologies, policies and tools;
- Inequality; and
- Governance and management reforms.

These intertwined developments play an influential role in framing and motivating public expectations of government.

² Bliss T & Breen J (2009). *Implementing the Recommendations of the World Report on Road Traffic Injury Prevention. Country guidelines for the Conduct of Road Safety Management Capacity Reviews and the Specification of Lead Agency Reforms, Investment Strategies and Safe System Projects*, World Bank Global Road Safety Facility, Washington DC.

Road safety as a global priority

The first transformative development this century that I wish to address is the emergence of road safety as a global priority.

The findings of the Global Burden of Disease (GBD) project highlighted the true scale of crash trauma on our roads, benchmarked against other causes of death and disability.³

As road safety professionals we already knew the significance of the problem we were facing. We knew the burden was large. We knew that young people were disproportionately represented in this burden and that the societal costs of crashes were high. But despite this understanding, the GBD data shed new light on the public health dimensions and implications of the problem, and came as both a shock and a reawakening.

Reinforcing the significance of the GBD estimates was the emerging macroeconomic view that improved health generated income growth, a reversal of the more conventional view that income growth resulted in improved health.⁴ This insight resonated with a rethinking of country development priorities that had shifted from a narrow focus on income and spending to placing a high priority on education and health, plus social, cultural and political participation.

Development aims to promote higher living standards for all, with an emphasis on improved health, education and people's ability to participate in the economy and society. Viewed within a twin pillar framework, development seeks to foster an investment climate conducive to increased growth, productivity and employment, and to empower and invest in people to include them in the process.⁵ The sheer scale of health and wealth losses from road crashes undermines this necessary inclusiveness and their prevention has become a global priority.

Following a period of sustained advocacy the United Nations Decade of Action for Road Safety 2011 – 2020 was declared with an ambitious global goal to stabilise and then reduce the forecast level of road fatalities by 2020.⁶

In line with the findings of the 2008 OECD *Towards Zero* report and the Commission for Global Road Safety's second *Make Roads Safe* report, the Decade's Global Plan recommended the adoption of the *Safe System* approach by all countries,

³ Murray CJL, Lopez AD, eds. (1996). *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability From Diseases, Injuries and Risk Factors in 1990 and Projected to 2020*, Harvard University Press, Boston.

⁴ Bloom D, Canning D (2000). *The Health and Wealth of Nations*, Science, Vol 287.

⁵ Stern N, Dethier J-J, Halsey Rogers S (2005). *Growth and Empowerment: Making Development Happen*, The MIT Press, Cambridge Massachusetts and London England.

⁶ UN General Assembly resolution 64/255, March 2010, New York.

irrespective of their development status or current road safety performance levels.⁷

⁸

Road crashes are a leading cause of death for young people and in terms of GBD rankings for older children and young adults this picture does not change much across the developed and developing world.

Ranking of road crashes as cause of death for young people

Age Group	Global		Developed		Developing		United Kingdom		Sweden	
	1990	2010	1990	2010	1990	2010	1990	2010	1990	2010
28 – 364 days	21	19	10	11	22	19	10	12	7	12
1 – 4 years	9	9	3	2	9	9	3	3	2	3
5 – 9 years	5	4	1	1	6	5	1	1	1	2
10 – 14 years	3	2	1	1	4	2	1	1	1	1
15 – 19 years	1	1	1	1	1	1	1	1	1	1
20 – 24 years	1	1	1	1	1	1	1	1	2	2
25 – 29 years	1	2	1	2	3	2	2	3	2	3
30 – 34 years	2	2	2	3	3	2	2	3	2	3

Source: Institute for Health Metrics and Evaluation (2013). *GBD 2010 Arrow Diagrams*, University of Washington

Between the ages of 15 to 34 years there is little difference in rankings between low and middle-income countries and the United Kingdom and Sweden, with little if any improvement in these rankings over two decades from 1990 to 2010.

Road crashes rank highly with suicide, drugs and interpersonal violence as a leading cause of death for our young people. In addition they contribute at least an order of magnitude more disabling injuries, which greatly increases the overall health burden.

After more than a hundred years of motorisation, crash risks for young people in our road systems are still not being effectively managed.

Perhaps we should think a bit harder about this?

The Safe System approach

The second transformative development this century that I wish to address has been the promotion and adoption of the *Safe System* approach to road safety management.

⁷ OECD (2008). *Towards Zero: Achieving Ambitious Road Safety Targets through a Safe System Approach*, OECD, Paris.

⁸ Commission for Global Road Safety (2009). *Make Roads Safe: A Decade of Action for Road Safety*, Commission for Global Road Safety, London.

The genesis of this approach can be found in the Swedish *Vision Zero* and Dutch *Sustainable Safety* strategies of two decades ago that set a long-term goal for the road system to be free of deaths and serious injuries.^{9 10}

Safe now means safe – not partially safe – like rail safety.

The *Safe System* approach systemically addresses the interfaces of the well-known Haddon matrix that first introduced scientific road safety management in the second half of the 20th century. Hence the approach is not entirely new, but what is innovative is its zero harm goal and strong emphasis on operator accountability for performance.

Road users are error prone and physically vulnerable. Their safety in the road system is assured by them not being exposed to forces that exceed their tolerance to injury. Hence speed management is crucial. For safety purposes the setting and enforcement of speed limits should be determined by the intrinsic protective qualities of the road infrastructure and vehicles that use it, rather than the free speed behaviour of road vehicle users.

Fatalistic and philosophical views that challenged the ambition of this approach during its unveiling have been displaced by widespread acceptance. However, this acceptance has been muted, and to some extent negated, by the view that it will be a long-term venture requiring shared responsibility to achieve the desired goal. The *Safe System* approach now represents the status quo for many road safety professionals. There is a growing recognition that the elimination of deaths and serious injuries for significant sections of the road network is already a reasonable and achievable expectation.

Sustained innovation is required to proactively and holistically build safety into the road system, rather than reactively and incrementally adjusting to system failures. This presents a new way of managing road safety performance, where the end goal of eliminating deaths and serious injuries shapes and integrates the interventions to achieve it, rather than the performance of proven interventions shaping the ambition of the end goal.

Furthermore, safety must be aligned with the achievement of other sustainable development goals to secure environmental, energy and health co-benefits. A safe road system is integral to an even larger more complex system of sustainable human habitats. Nowhere are these new management imperatives more evident than in the major cities of our world, like London.

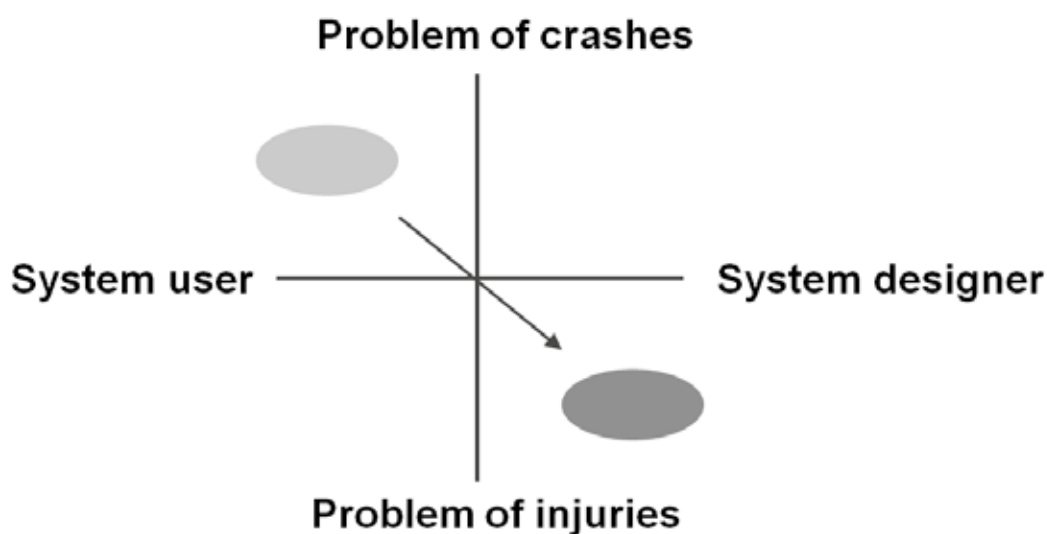
⁹ Tingvall C (1995). *The Zero Vision*. In: van Holst H, Nygren A, Thord R, eds. *Transportation, traffic safety and health: the new mobility*. Proceedings of the 1st International Conference, Gothenburg, Sweden Berlin, Springer-Verlag.

¹⁰ Wegman F, Elsenaar P (1997). *Sustainable solutions to improve road safety in the Netherlands*. Leidschendam, SWOV, Dutch Institute for Road Safety Research, Leidschendam.

We are still adjusting to this paradigmatic shift in ethics, design philosophy and practice. Mobility becomes a function of safety, rather than trading off safety for mobility goals. Safety cannot be viewed in isolation, as an add-on.

This requires a shift from the often-posed problem of drivers and crashes to the problem of system designers and injury prevention. The connection with unacceptable health losses arising from crashes is directly made and becomes the focus for analysis and action.

From crash reduction to injury prevention



Converging technologies, policies and tools

The third transformative development this century that I wish to address is the rapid convergence of technologies, policies and tools and their impacts on road transport.

This convergence presents both new opportunities for improved road safety, reinforcing the *Safe System* approach, and new management challenges concerning unintended consequences arising from technological innovations that may detract from safe road use.

We are experiencing an industry-led convergence of information and communications technologies with transport technologies that has profound implications for 21st century mobility. This is unfolding at a pace far greater than the convergence of telecommunications and computer technologies in the final decades of the last century, a convergence that precipitated the breakdown of our public telecommunications monopolies and the emergence of new operators and services.

Integrated surveillance technologies are making it possible to more effectively control and deter unsafe network behaviours. In-vehicle telematic devices are creating incentives for safer driving through the promise of lower insurance premiums. New vehicle technologies for trucks, cars and motorcycles are providing higher levels of primary safety by reducing the potential for crashes and their severity. Extending these technologies with open source wireless systems that allow vehicle-to-vehicle, vehicle-to-infrastructure and vehicle-to-vulnerable road user communications is anticipated to offer further safety and traffic management gains in the near term. Driverless automated vehicles are already being trialed and staged frameworks for their introduction assessed.

As with any technological vision, there are real world complexities to be addressed. How do we manage the risks of interfaces between drivers, occupants and new technologies in vehicles? Technological capacity is increasing rapidly, whereas human cognitive capacity is not. How do we ensure that the technology works as intended and behaviour adaptation does not negate its effectiveness? How do we define adequate test methodologies for assessment? How do we encourage manufacturers to offer effective technologies? How do we encourage consumer uptake? What do road infrastructure authorities need to do to prepare for the introduction of connected and autonomous vehicles? How will they handle issues of road design and management, ITS infrastructure, data management and security, and liability, as they relate to safety? There are many questions to answer.

We are far from understanding the safety implications of these accelerating developments, in terms of their benefits and costs. Scaled-up, well-funded, sustained trials and research are needed to understand the safety impacts and how best to manage them.

For example, at Monash University we are making the business case and assembling partners and resources for a five-year connected vehicle trial designed to evaluate crash outcomes, vehicle emissions and speeds in a real-time urban context. This trial aims to build on and enhance the initial findings of the University of Michigan Transportation Research Institute (UMTRI) Safety Pilot which underpinned the US government's announcement that vehicle-to-vehicle and vehicle-to-infrastructure communications could become mandatory in new vehicles as early as 2017.

The UMTRI work is being further scaled up and is impressive in its scope and ambition. Their on-road trial of 3000 connected vehicles is being extended, ultimately to 20,000 vehicles. In partnership with the private sector they are building a Mobility Transformation Center that next year will provide a realistic off-road environment for the testing of connected and automated vehicles and related human factors and robotics research.

Programmes of this nature are essential to ensuring that the promise of new technologies is delivered without compromising safety and other sustainable development goals. They are also essential to developing consumer acceptability and effective demand for the safety and mobility benefits the services will bring.

The realities of policy convergence must also be embraced, to ensure that the road safety agenda retains traction in the broader context of macroeconomic management and sustainable development priorities that preoccupy governments. Road safety cannot be managed in isolation; it is inextricably tied up in the business of government.

National transport sector visions now embrace safe, clean and affordable goals, with a strong focus on achieving measurable results. New monitoring and evaluation tools are being developed to guide strategic and operational decision-making. Longer planning horizons for climate change strategies require us to more highly value the wellbeing of future populations. The integration of safety related data sources on geographic information system platforms is facilitating a shift from reactive, band-aid solutions to proactive, systemic safety improvements across the road network. In high-income countries new car assessment and road assessment programmes are providing valuable measures of safety performance that road users, vehicle manufacturers and road operators can easily understand and act on. In low and middle-income countries facing rapid motorisation, the Global New Car Assessment Programme and International Road Assessment Programme are using these tools to successfully reframe national road safety conversations. Naturalistic data are providing real-time insights into road user crash behaviours. Morphomic data derived from the medical imaging of injuries in live patients are shedding new light on injury mechanisms and crash impacts for different vehicle occupant body types.

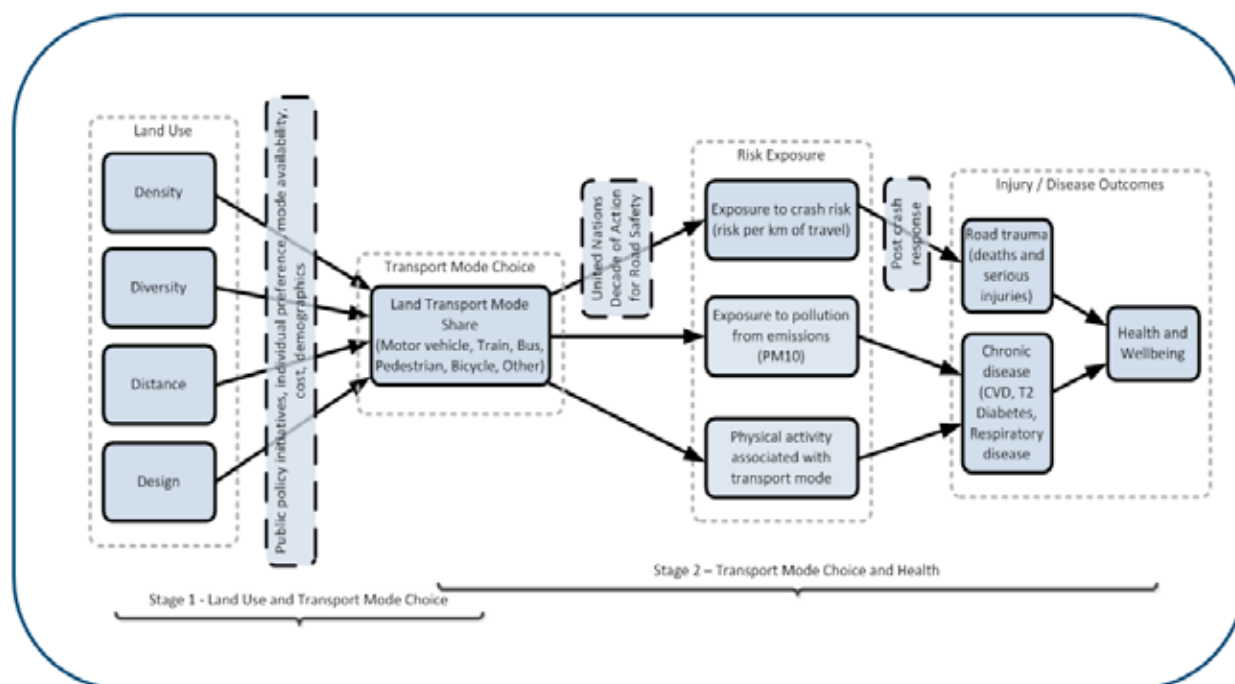
Rich insights and practices are surfacing from advanced centers of research and development, bringing with them both a sense of opportunity and calls for urgent action. We are being drawn into in a new era of road safety management, which requires the building of new evidence bases, to go beyond and supplement practices where diminishing returns have set in.

Seeking to influence the transport system to achieve desired population health outcomes will require road safety to be framed in a broader context integral to the Sustainable Development Goals. Organisations leading the global road safety dialogue, like the FIA Foundation, embrace and promote this understanding. Cross-sectoral alliances are now taking on a new priority, especially between the transport and health sectors.

For example, at Monash University we are embarking on an ambitious programme to develop integrated models that can assess the impacts of land-use and transport modal choice on population health. Road deaths and serious injuries are just one aspect of this, with other measurable transport-related health impacts including cardiovascular disease, type 2 diabetes and respiratory disease arising from vehicle pollution and sedentary lifestyles.

A prototype model has explored these impacts in six cities demonstrating various levels of motorisation and economic development (in Melbourne, Delhi, Beijing, New York, London and Copenhagen).

Land use, transport and population health



Preliminary findings illustrate that significant reductions in chronic diseases can be achieved by increasing land use density and diversity, decreasing the distance to public transport, and encouraging shifts from short vehicle trips to active transport modes. However in the cities modelled, with the exception of Delhi and Copenhagen, increased road trauma resulted from increased walking and cycling, unless appropriate road safety interventions were factored in to ameliorate the risks.

Our ongoing research programme aims to use agent-based modeling approaches that integrate elements across health, transport and land-use, to enable city-based health, transport and planning policies to be explored and evaluated by policy-makers. Using the computing and visualisation power of the Monash University CAVE (its Computer Aided Virtual Environment laboratory) we will also be able to assess dynamic interactions between elements of the model in real time and observe the emergent health impacts of transport and land-use decisions.

In this new century of dramatic change our research and policy evaluation toolkits must be commensurate with the complexity they seek to address. New vistas in planning and policy analysis are becoming possible and the way forward can be examined more systematically.

We are only in the early stages of this journey.

Inequality

The fourth transformative development this century that I wish to address is the widespread concern about inequality in society, which is highlighting growing income and wealth disparities and related quality of life issues.

Inequality is also receiving more attention in the road safety debate, especially in the context of promoting active transport.

The growing performance gap between high-income and low and middle-income countries underpins the call for a Decade of Action for Road Safety, as does the disproportionate impact on vulnerable road users in the latter countries. Within countries worldwide safety inequalities are evident between urban and rural areas, road types, vehicle types and road users, young and old. Awareness and the growing unacceptability of these inequalities has been heightened by the promotion of the *Safe System* approach, with its goal of ensuring safety for all users of the road transport system. Improvements in analytical tools are highlighting the prevalence of unequal outcomes and the systematic means of addressing them. There are growing concerns that rapid technological change in the vehicle fleet and its communications with the road environment could create new inequalities with unintended safety consequences.

An area of inequality now receiving more attention concerns the development of crash dummies and models for use in vehicle crash testing that better represent smaller, frailer, older and larger members of the population. Research conducted by the International Center for Automotive Medicine (ICAM) at the University of Michigan highlights the significant contribution made to crash injury outcomes by vehicle occupant body characteristics, with the condition of an occupant's body being seen as important, if not more important in some circumstances, than crash configuration, crash severity and safety belt use.¹¹

An ambitious research programme is now being mounted at ICAM using morphomic data to develop more biofidelic test devices for elderly human bodies, given the growing population of ageing drivers and crash injury risks arising from their greater physical frailty.

This programme goes to the very heart of the *Safe System* approach by seeking to better understand injury mechanisms and create improved measurement devices for use in vehicle crash testing programmes, which in turn will lead to improved safety for vehicle crash victims.

In its first stage it aims to produce an elderly human body finite element model, then a virtual elderly crash dummy model, and finally an effective physical elderly crash

¹¹ Wang, S (2014). *Updated Data Acquisition Targets for the International Center for Automotive Medicine*, JSAE Forum, Tokyo.

dummy. Future development priorities could address women, children and obesity, as these risk areas also require more biofidelic crash testing tools.¹²

Governance and management reforms

The fifth and final transformative development this century that I wish to address concerns ongoing governance and management reforms of public sector agencies in high-income countries, and their implications for low and middle-income countries.

These reforms commenced late last century and have continued unabated into this century, impacting significantly upon agencies responsible for the road safety management system.

The reforms address fundamental relationships between government and its agencies and agents, and the public they serve, and are hence central to the topic of this lecture. They have implications for how government can address public expectations concerning the other four transformative developments previously identified.

Driven by objectives to remove bureaucratic rigidities, inefficiencies and waste – to address fiscal deficits and public debt and enhance transparency, openness, service quality and accountability – these reforms have resulted in a substantial restructuring of agencies, their service delivery arrangements and related partnership and stakeholder processes.

Public expectations must be considered in the context of the channels open to give expression to them and the capacity of government and its agencies and agents, and the government in opposition, to respond authentically. The strategic delivery capacity of agencies is vital in this process.

As well as ensuring their short-term public delivery capacity, attention must also be paid to the extent to which agencies as part of government have the capacity, financial resources and independence to advise and influence on strategic issues with implications that extend far beyond the electoral term.

Are public expectations being met?

To address the central topic of this lecture – taking the five transformative developments outlined into consideration – are public expectations concerning government's responsibilities for the efficient, effective and equitable delivery of the road safety management system being met?

In my view – broadly speaking – they are not.

¹² Wang, S (2014). Personal correspondence.

Road safety as a global priority

First, road safety as a global priority is receiving little government attention.

High-income countries have been missing in action and have largely ignored the Decade of Action's call for donor support to low and middle-income countries. There have been some exceptions to this. Modest funding has been provided to the World Bank Global Road Safety Facility to support its capacity building mission. Various bilateral initiatives are evident. But overall the level of government support is not commensurate with the scale of investment required to ensure sustainable success.

This situation may change for the good once the new Sustainable Development Goals are announced next year. Road safety is currently referenced in the health and liveable cities goals of the zero draft going forward for another round of intergovernmental negotiations, with a 50% reduction goal being considered for the period 2015 - 2030. If this is retained it is more likely that the donor community will support road safety as a development priority.

UK situation

Looking at the UK situation, in the past the Department for International Development (DFID) provided significant financial support to pioneering work on global road safety, conducted especially through the international arm of the Transport Research Laboratory. Over the last decade there has been less appetite for global engagement, but the UK is currently a small-scale contributor to the World Bank Global Road Safety Facility.

The Safe System approach

Second, looking beyond Sweden and the Netherlands as exemplars, progress with implementing the *Safe System* approach has been slow.

While there has been widespread adoption of the *Safe System* approach in strategic frameworks, government implementation in some countries has struggled and been confounded by policy positions that could be interpreted as running counter to core *Safe System* principles.

Fragmented rather than systemic approaches are still evident. Confining the end goal to a distant future, rather than immediately embracing it, provides sufficient ambiguity to stick with business as usual solutions in the near term, rather than invest in the new capacity and actions required to seek the goal's achievement.

However, there are some promising developments. For example, New Zealand is delivering a sustained *Safe System* training program through its agencies nationwide and promoting related concepts and issues to the wider public through television and social media. It is also developing 'signature' projects that aim to demonstrate

Safe System policies and practices and improve road user and community understanding of their new strategy.

UK situation

The UK has not adopted the *Safe System* approach, although it is briefly acknowledged in its current strategic framework that favours a public health approach. An incremental programme of interventions is promoted, guided by evidence where available. Specific actions emphasise a devolved local delivery platform, with a focus on education to improve road user skills and attitudes, and targeted enforcement and sanctions.¹³

Convergence of technologies, policies and tools

Third, the convergence of technologies, policies and tools is running ahead of government processes aimed at ensuring safe mobility outcomes.

Unless governments quickly get in step and proactively engage in these developments, we could see a regulatory tsunami addressing unintended road safety consequences arising from the introduction of new technologies.

Developments in the USA provide an example of effective government leadership. Mutually beneficial, public private partnerships to develop connected and autonomous vehicle technologies are evident, accompanied by a strong policy push to address problems of driver distraction.

UK situation

The UK is well placed to participate in and benefit from European initiatives in this arena and its strategic framework highlights key vehicle and infrastructure safety issues. However, there is no strong sense in this framework of a proactive and well-funded national strategy to address them.

Inequality

Fourth, many of the inherent inequalities identified remain to be addressed, with efficiency goals still over-riding equity goals in many circumstances.

Governments in high-income countries are more programmatically addressing inequalities arising from unsafe facilities for vulnerable road users in urban areas, but in many instances the solutions adopted are lacking in scale and fall far short of *Safe System* design principles.

¹³ Department for Transport (2011). *Strategic Framework for Road Safety*, London.

Progress is also evident in government support for new car assessment and infrastructure safety rating tools. However, further development of these tools is required to address vehicle aggressivity issues, vehicle occupant injury impacts, and urban roads in different traffic and land-use contexts.

UK situation

The UK strategic framework acknowledges the higher risks faced by vulnerable road users and looks mainly to education and training to address these. A more integrated *Safe System* inspired approach is evident in Transport for London's Safe Streets strategy.¹⁴

Governance and management reforms

Fifth, governance and management reforms in high-income countries have brought government safety priorities into sharper focus, but their alignment with other goals and related management structures has often blurred this.

Tightened budgets, short-term service delivery priorities and sometimes the lack of quantitative safety performance targets to be periodically tracked over the longer-term have undermined the building of strategic management capacity. Ongoing agency restructurings and loss of institutional knowledge have also hindered the building of sustainable teams required for the implementation of effective, long-term strategies.

However, in high-income countries there are some good signs. Sweden still sets the pace. Its use of safety performance indicators to target desired increases in improved infrastructure protection for specified traffic types and desired uptake of safer vehicles is exemplary. Its leadership in the development of ISO 39001 has resulted in a safety governance and management framework that has widespread potential for application in the private and community sectors. New Zealand's introduction of road infrastructure safety rating tools (KiwiRAP) is reshaping safety funding decision-making processes from a reactive to more proactive stance.

In low and middle-income countries, with notable exceptions, road safety governance and management capacity is extremely weak. The experience of high-income countries last century and their complex challenges this century provide valuable lessons to be learned and adapted to developing contexts. However, there is still a strong tendency for governance and management capacity to be taken as a given in low and middle-income countries, rather than recognising its absence and high priority for action.

The importance of lead agencies in successful road safety management is becoming more apparent. Argentina has made great progress since the creation of its road

¹⁴ Johnson B (2014). *Improving safety for vulnerable road users in London. Working together, towards roads free from deaths and serious injury*, Transport for London, PACTS Conference, London.

safety lead agency in 2008, which was modelled on institutional arrangements in Spain, another country demonstrating recent success through strong leadership. The setting of ambitious performance targets has been a central feature of both countries' governance and management arrangements.

UK situation

Governance and management reforms remain high on the agenda in the UK. The national strategic framework for road safety places its core emphasis on empowering local authorities and citizens to make informed choices about improving road safety. However, national target setting and performance management are seen as constraining this process and no longer necessary. Addressing fiscal deficits and public debt are overarching government challenges impacting on road safety funding. Governance of strategic assets is a high priority. The proposal to transform the Highway Agency into a government owned company, to improve efficiency, quality of service and value for money, raises significant safety issues.

Final observations

To conclude I will make some final observations.

Meeting public expectations for road safety in the 21st century requires government to take a long-term, strategic perspective and create a greater sense of urgency concerning what is at stake. This is true for both low and middle-income countries and high-income countries.

Low and middle-income countries must reject the fatalistic pathway taken much of last century by high-income countries and simultaneously make the paradigmatic shift that is challenging high-income countries this century.

High-income countries must invest in sustained innovation to go beyond what is currently known and continue to improve safety performance.

As highlighted, transformative developments framing and motivating public expectations include road safety's emergence as a global priority; the adoption of the *Safe System* approach; the convergence of technologies, policies and tools; inequality; and governance and management reforms.

Many voices must be heard and many issues managed. There is a growing need for government to be responsive to public expectations concerning these issues and to show leadership in addressing them.

High capacity, government lead agencies are central to fulfilling this role. Their strategic results focus for road safety and related interventions will require alignment with other sustainable development goals and quantitative performance

targets. Agency coordination, legislation, funding and resource allocation, promotion, monitoring and evaluation, and research and development and knowledge transfer functions must systematically support the delivery of interventions. All elements of the road safety management system must be aligned for effective, efficient and equitable delivery.

In particular, the potential safety risks associated with the introduction of connected and autonomous vehicles to strategic road networks should be anticipated and addressed, well in advance of potential problems arising, and accountable governance and management arrangements developed.

It cannot be assumed that past practices will suffice, or that emerging safety issues can be easily worked around once they occur. We are on the threshold of something new where rapid change is a reality and it would be timely for countries to review their capacity to successfully manage it.

To conclude, it is a challenging thought that in a considerably less diverse and conflicted mobility space it took the first 70 years of the 20th century for high-income countries to gain control of road safety performance and begin bringing their road crash deaths and injuries down.

In the 21st century we are facing a much more complex situation that is proliferating rapidly on a far greater global industrial scale.

I will finish now with a question for all of us:

Are we really ready for this?

Previous Westminster Lectures

The Westminster Lecture is an annual event in which leaders in transport safety address topics of concern to practitioners, researchers and policy makers in the field. It is organised by PACTS.

- 24th Dr Rob Hunter, Head of Flight Safety, BALPA
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- 22nd Dr Jillian Anable, Centre for Transport Research, University of Aberdeen
More haste, less speed: changing behaviour for safety and sustainability
- 21st Danny Dorling, Professor of Human Geography, University of Sheffield
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- 20th Fred Wegman, Managing Director, SWOV Institute for Road Safety Research, The Netherlands
Putting People at the Centre: How to Improve Road Safety in the 21st Century
- 19th Professor Oliver Carsten, University of Leeds
Technology: Curse or Cure?
- 18th Professor James Reason CBE, Emeritus Professor, University of Manchester
Recurrent patterns in transport accidents: Conditions and causes
- 17th Professor Phil Goodwin, Professor of Transport Policy at the Centre for Transport and Society, UWE Bristol, Emeritus Professor at University College London
Determination and Denial: The Paradox of Safety Research and Traffic Policy
- 16th Professor Ronan Lyons, Professor for Public Health, University of Wales at Swansea
Connecting Public Health and Transport Safety
- 15th Professor Helen Muir, Director, Cranfield Institute for Safety, Risk and Reliability
In times of crisis how do passengers react?
- 14th Professor David Begg, Chairman, Commission for Integrated Transport
Transport Safety and Integration: putting the two together
- 13th Mr Ken Smart, CBE, Chief Inspector, Air Accidents Investigation Branch
Transport Accident Investigations: a question of trust

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- 12th Professor Richard Allsop, Centre for Transport Studies, UCL
Road Safety: Britain in Europe
- 11th Dr Rod Kimber, Director of Science and Engineering, TRL
2010: Getting there in one piece
- 10th Simon Folkard D.SC., Department of Psychology, University of Wales at Swansea
Transport: Rhythm and Blues
- 9th Dr Dianne Parker, University of Manchester
The social psychology of driver behaviour: is it time to put our foot down?
- 8th Professor Frank McKenna, Department of Psychology, Reading University
Death by Accident: the psychology of human error
- 7th Mr Stefan Nillson, Director, Automotive Safety Centre, Volvo
A Holistic View on Automotive Safety
- 6th Sir Alastair Morton, Co-chairman, Eurotunnel
There is no such thing as perfect safety in transport, but life is life, however you travel
- 5th Dr Leonard Evans, Principal Research Scientist, GM R&D Centre
Traffic Safety Measures, Driver Behaviour Responses and Surprising Outcomes
- 4th Mr Brian O'Neil, President, Insurance Institute for Highway Safety
Progress in Transport Safety: the US experience
- 3rd Mr Robert Coleman, Director General, DG VII, European Commission
Transport Safety and the EC
- 2nd Dr Ian Johnston, Executive Director, Australian Road Research Board
Effective strategies for transport safety: an Australian's perspective
- 1st Dr Jan C. Tetlow, Secretary General, European Conference of Ministers of Transport
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