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Work-related road safety: Case Study of British Telecommunications (BT)

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Source: Wallington D, Murray W, Darby P, Raeside R & Ison S. Work-Related Road Safety: Case Study of British Telecommunications (12-1196). Paper presented at the 91st Annual Meeting of the Transportation Research Board, Washington, D.C., January 22-26, 2012.

ABSTRACT

Implementing a long term, sustainable work related road safety program throughout a whole supply chain from door to door, rather than just gate to gate requires a constant balancing act between the needs of business, the economy and the environment. Despite an increasing interest in research, policy and practice in the area of work-related road safety, there remains few published case studies of organisations that have effectively managed this risk. The aim of this paper is to directly address this gap, by reviewing and evaluating a risk led approach to occupational driver management, risk assessment, monitoring and improvement undertaken by BT throughout its UK, and increasingly global, supply chain. The paper is based on a detailed chronological case study of the policies, processes and procedures implemented to manage the road safety risks of 100,000 BT workers over an 8 year period. From a review of processes and outcomes data available, a good practice model and lessons for occupational road safety researchers, policy makers and practitioners are identified – including a halving of the collision rate and costs, and significant environmental improvements through improved business practices, more sustainable ways of working and changing manager and driver behaviours.

INTRODUCTION

Occupational road safety, including commuting to and from work, is an emerging supply chain risk issue around the globe, of significance for both road and occupational health and safety, representing approximately 50% of worker fatalities and of road deaths in the EU (1).

Despite this increasing interest in the potential of occupational road safety to help governments and organisations reduce human and asset damage, protect the environment, generate business efficiencies, ensure legal compliance and cut costs, most researchers still cite, and base recommendations on, the Swedish Televerket study (2) undertaken in the mid 1980s.

The aim of this paper is therefore to help close an important gap in the research literature, by developing and evaluating an effective process for improving occupational road safety. This is addressed by describing British Telecommunications (BT), a company which has invested time and resources in its road safety program over many years, based on research and experience from around the world. The following sections briefly describe BT, the process applied to review and manage its occupational road safety, project implementation, project outcomes evaluation and likely future steps. Finally, the paper seeks to identify some lessons learned for other organisations, researchers and policy makers worldwide.

BACKGROUND TO BT

BT is one of the world's leading communications services companies, operating in over 170 countries worldwide. In the 2009/2010 financial year BT Group revenue was £20.9 billion. As such, BT has one of the largest motor fleets in Europe, with over 35,000 vehicles in the UK alone, and recognises that occupational road safety has a significant potential impact on the health, safety and well-being of employees, their families and local communities. This paper describes the programme of policies, procedures and processes that the company has implemented over the last eight years to promote safer and fuel efficient travel practices under the banner of 'Reducing Risks on the Road'. At the beginning of the program fleet claims made up of collisions and other incidents (such as thefts, vandalism and vehicle fires) cost the company approximately £25 million in direct costs (including repairs to BT and third party vehicles) and an estimated 3-4 times more in indirect costs (including administration, failed operations and investigation time).

The kick start for the programme described came in 2002, when the company appointed a new Group Safety Advisor in the UK, with previous experience in the logistics sector. Driving was identified as the biggest injury risk facing the company, and members of the public with whom it comes into contact. Having identified the risk levels, a process was implemented, based on health and safety principles, applying the Haddon Matrix (Figure 1) as a framework to structure, develop, review and evaluate the program (3, 4, 1). The Haddon Matrix shown in Figure 1 can be used as a management self-review, gap analysis or post collision response investigation tool by asking: 'Do we have the following in place?' for each of the statements in the Matrix. 'No' responses indicate the gaps in the occupational road safety system.

	Management culture	Journey	Road/site environment	People	Vehicle	Society/community
Pre-event or pre-drive	Leadership Business case Safety Audit Policy and procedures Safety climate tools Management structure Board level champion SHE or quality-led SHE committee Safety pledge	Travel surveys Purpose Need to travel Modal choice Journey planning and route selection Shifts/working time Fatigue management	Risk assessments Guidelines Site layouts Hot-spot analysis Road improvement	Select Recruit Induct Handbook Assess Train Encourage Equip Communicate Driving pledge Monitor Correct	Selection Specification Safety features Standards Maintenance Checking Telemetry to monitor	Marketing program Family members program Community involvement Safety groups Road Safety Week Conference circuit Media/outreach Safety awards Benchmarking Regulator briefings and involvement Corporate Social Responsibility (CSR)
At scene	Emergency support to driver	-	Manage scene	Known process to manage scene	Crashworthy Telemetry to capture data	Escalation process
Post-event	Report, record, investigate and evaluate Change management	Debrief and review	Investigate and improve	Driver debrief Counselling & support Reassess/train	Investigate black box data Vehicle inspection & repair	Manage reputation and community learning process

Figure 1 - Summary of countermeasures in the extended Haddon Matrix framework

In the first year of the program, BT's application of the Haddon Matrix manifested itself in the following initial steps, during 2003:

- Detailed review of existing policy and interventions in the various Lines of Business, which eventually led to development of detailed pan-BT occupational road safety policy and comprehensive intervention allocation rules being implemented.
- Initial insurance claims analysis undertaken by a driver training company.
- Analysis of existing driver risk assessment data based on 8,206 drivers undertaken by Nottingham Business School, and reviewed by Edinburgh Napier University, identifies link between risk assessment outcomes and collisions (5).
- The Group's Safety advisor attended management development course on road safety run by Nottingham Business School, which explored the role of the Haddon Matrix as an effective systems-based occupational road safety framework.
- Detailed claims analysis undertaken by the Insurer.
- Business case, based on societal, legal, cost and business factors for driver risk assessment successfully made for program roll-out to all drivers across the BT Wholesale Line of Business, as a pilot for the whole of BT, after which a successful BT-wide business case followed.

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- Detailed research study started with Edinburgh Napier University to evaluate risk assessment outcomes based on 16,004 and later 26,000 BT drivers (6).
- MBA project started to review and recommend detailed program development (7). More recently an MSc study was also undertaken based on the program (8), and PhD research is ongoing (9).
- Management training course on occupational road safety, “Whose Risk is it Anyway” developed and rolled out for all managers with more than 20 (later reduced to five) drivers.
- BT won the Brake Road Safety Award based on process and outcomes improvement data, from the claims review undertaken by its insurer - providing senior management impetus to further develop the program.

THE BT OCCUPATIONAL ROAD SAFETY PROGRAM: APPLYING THE HADDON MATRIX

Since BT’s Health and Safety Group identified driving as its biggest and most expensive risk during 2002, BT’s quarterly meeting Motor Risk Management Forum (MRMF) has developed a strategic program leading to a range of ground-breaking initiatives to manage driver safety.

BT follows UK Health and Safety Executive Guidance (10) in managing its road risks, and utilises a recently reviewed and updated 14-point strategy based on the Haddon Matrix covering management culture, journeys, road/site environment, people, vehicles and society/community. The 14 point strategy is:

1. All employees who drive on business for BT complete online driver assessment (called RoadRISK and covering each driver’s personal exposure, attitude and behaviour on the road) and Safe Driving Pledge (agreeing to follow BT safe driving rules) as their ‘Permit to Drive’ and are eligible to enter into BT’s *Safe Driver of the Year competition, which includes online question-banks, filtering the top 30 people to proceed to the annual finals day.*
2. A range of appropriate online, communications base and face to face interventions are available to address the most common types of development need.
3. All managers responsible for five or more drivers complete a fleet safety workshop.
4. Drivers involved in two or more collisions complete relevant behind the wheel training, focusing on key risk factors such as defensive driving and low speed manoeuvring.
5. Investigation of collisions is mandatory for all incidents resulting in more than £2,500 (\$4,092) damages.
6. Formal link between the data logged by claims handler and RoadRISK outcomes to allow interventions to be based on risk assessment as well as collision history.
7. Online data-warehouse analysis of collision, risk assessment, training and where available telemetry and licence data, using DriverINDEX 24/7/365 web based KPI and intervention cascading tool to provide timely road safety information to all levels of management.
8. Monthly internal and external publicity campaigns to promote road safety messages.
9. Van familiarisation training built into all engineers’ basic induction training.
10. Short duration slow speed manoeuvring courses, called Back in Control, available for appropriate BT drivers.

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11. Routine eyesight testing for drivers.
12. Online driver assessment and training tools available to family members of BT people and non occupational drivers to promote the community road safety agenda (11).
13. Extra consideration given to minimum vehicle selection safety specifications via the European New Car Assessment Program (NCAP) program, and the Birthday Process for vehicle checking, monitoring and maintenance.
14. Trials of technological interventions, eg telematics, vehicle safety features and electronic licence checks direct with DVLA, are ongoing.

BT publishes its policies and ensures that they are accessible to all its employees via the BT Intranet. In addition, driver handbooks, individual driver assessments and intervention plans for individual drivers also form part of the management process. This has been statistically validated by Edinburgh University Napier in studies based on 8,000, 16,000 and 26,000 drivers (5, 6).

Getting the proactive support and involvement of managers, supervisors and drivers for the process shown in Figure 2 has been key to the success of the program.

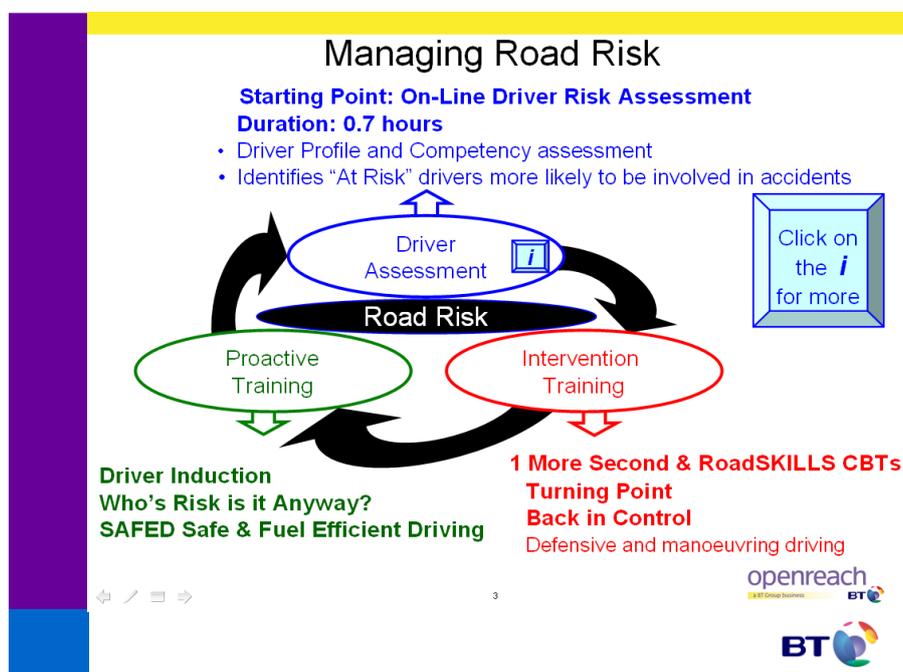


Figure 2 – BT driver risk assessment, monitoring and improvement process

BT's Safe Driving program is to the best of our knowledge the largest initiative of its type anywhere in the world. Running such a large scale program across the British Isles, with thousands of managers and tens of thousands of drivers has traditionally been logistically challenging and cost-prohibitive. So, in keeping with its core business, BT has successfully pioneered the innovative use of online tools to meet the challenge.

Since 2002, the process in Figure 2 has reflected itself in the following implemented outcomes:

- 3,000+ managers trained in occupational road safety, and logged onto sophisticated but simple to use line manager information system.

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- 95,000+ people registered on occupational road safety system.
- 65,000+ drivers risk assessed.
- 13,000+ people identified as ‘non-business’ drivers.
- 45,000+ drivers signed road safety pledge.
- 45,000+ trained via computer based training (CBT) modules One More Second and RoadSKILLS.
- 18,000+ participated in BT’s *Safe Driver of the Year* competition in last 5 years.
- 12,000+ drivers trained on targeted behind the wheel training courses SaFED and Back in Control.
- 4,000+ family and friends used the family members community road safety program, which allows BT workers to take the road safety message home and into their local community (11).
- Engaged with external community as a founder member of the Fleet Safety Benchmarking Project (12) and participating in industry events including the recent NIOSH Global Road Safety for Workers conference (13), Driving for Better Business, the European Road Safety Charter and PRAISE project (14).
- Hundreds of thousands of kilometres of exposure (10-20% of journeys) removed through home, tele and smarter working and the Safe & Fuel Efficient Driving) SaFED program.
- Policies and processes under constant review against Haddon Matrix and other good practice frameworks (15).

These process outcomes, framed by the Haddon Matrix, have led to a range of quantifiable benefits for BT.

EVALUATION OF SHORT, MEDIUM AND LONG TERM BENEFITS

BT has seen many positive results from the program. A culture of safe driving has been developed within the workforce with a beneficial impact on long term statistics and costs, with claims reducing from 59 to 31 per 1,000 vehicles and annual costs by over £12 million during the period 2001-11 (Table 1). This process is based on engaging managers and drivers in the risk assessment process (Figure 3), collision rate overall (Figure 4) and numbers of serious collisions and incidents (Figure 5). The costs for 2009-10 are distorted upwards due to one particular outstanding claim, with a reserve of £3.5 million.

Table 1 – BT Collision and cost reductions 2001-2011

Year	Claims	Costs	Vehicles	Claims/ 1k vehs	Cost/ claim	Cost/ vehicle
2001-2	32,610	25,583,981	46,028	59	785	556
2002-3	28,142	20,889,596	45,608	51	742	458
2003-4	26,556	17,173,742	45,188	51	647	380
2004-5	17,001	11,682,083	44,768	32	687	261
2005-6	17,170	18,227,418	44,280	32	1062	412
2006-7	19,017	19,261,503	43,800	36	1013	440
2007-8	15,626	15,362,492	43,320	30	983	355
2008-9	15,449	12,980,332	41,616	31	840	312
2009-10	14,706	14,562,135	37,488	33	990	388
2010-11	12,623	11,706,037	34,558	30	927	339

As BT's online risk assessment and engagement process has increased year on year, so its overall claim rate has reduced (Figure 3). This reveals the importance of organisational process and working closely with line managers and drivers to promote compliance at all levels. At first glance, there appears to be a positive relationship between the RoadRISK outcomes and the collision rate. Further work is on-going to develop this data and test for statistical significance.

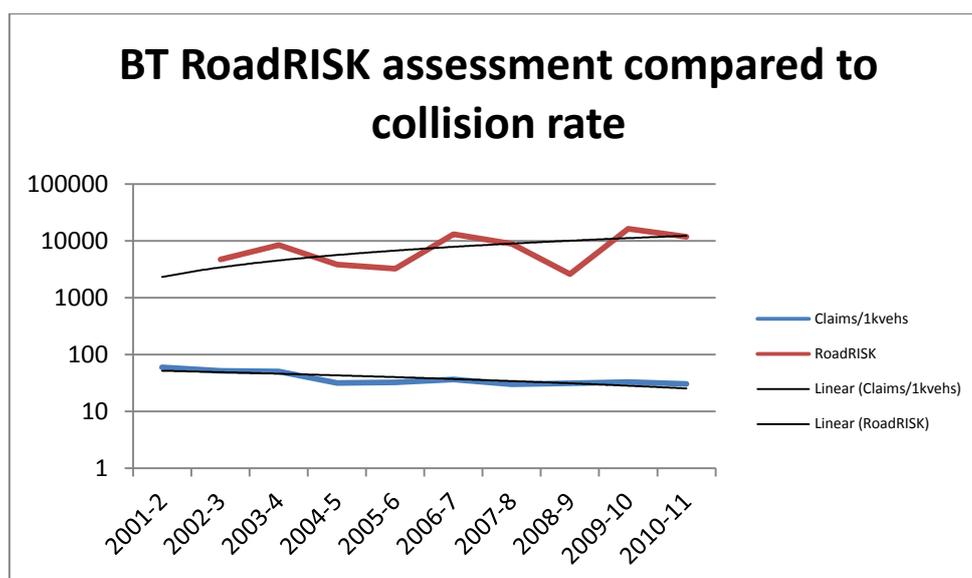


Figure 3 – Relationship between fleet safety risk assessment and road safety improvements

More detail is presented in Figure 4 on how the overall claim rate per thousand vehicles has halved on a month by month basis over the length of the program. The gap in the data in 2004 was caused by a change in the claims-handler used by BT at that time. Spikes in June 2006, September 2008 and December 2009 represent respectively: a vehicle damage birthday project/better reporting being implemented, heavy de-fleeting at the onset of recession and a sharp increase in collisions on snow and ice as UK winters have become more severe in recent years. Figure 4 represents a significant improvement in road safety for BT, and represents savings in both direct and indirect costs.

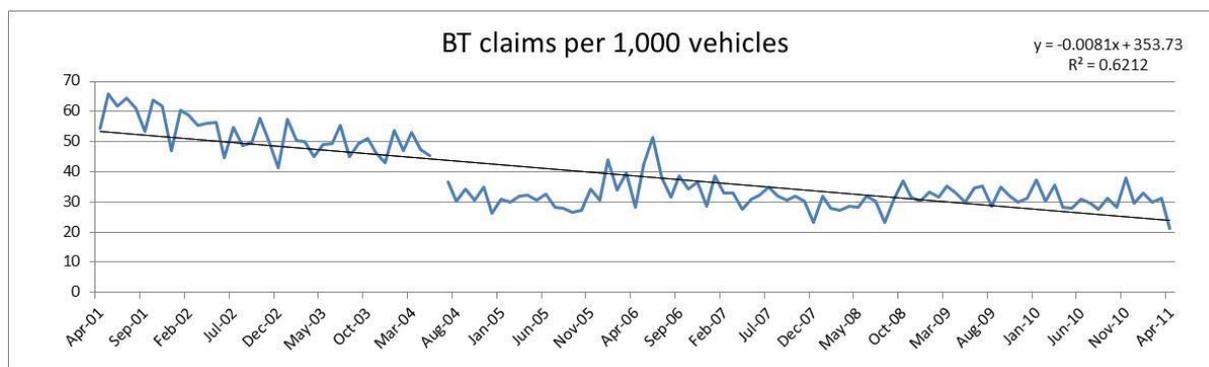


Figure 4 – Long term trend in claim rate (per 1000 vehicles)

As well as the overall claim rate, the program has also had a major impact on the absolute number of serious collisions and incidents involving BT's fleet – which has fallen steadily month by month since 2005 (Figure 5), as have other incidents such as vandalism, fire and theft.

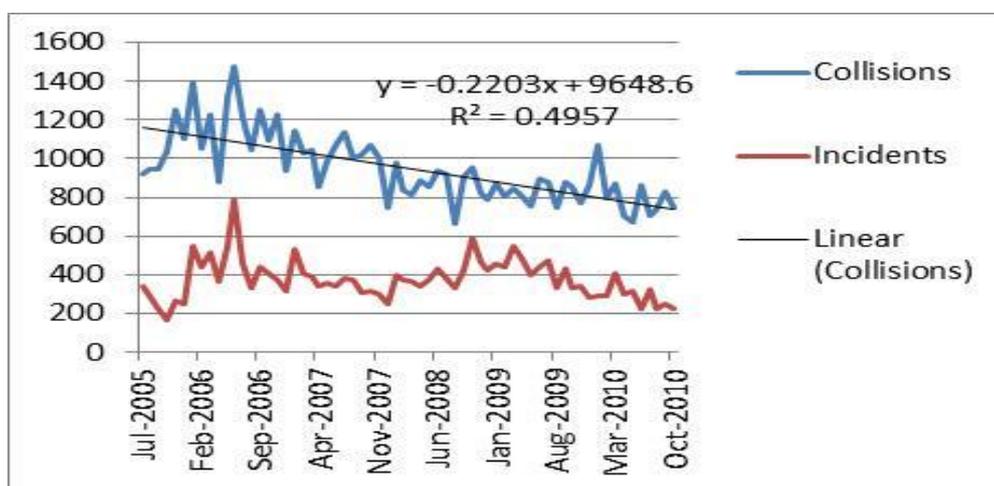


Figure 5 – Serious collisions and incidents involving BT's vehicles

As well as these substantial year-on-year incident and cost reductions, and process improvements there have been other benefits from the program which have included managers and drivers hitting their personal targets. The project raised BT's profile and reputation as a road safety leader, including making a major contribution to the organisation's Corporate Social Responsibility (CSR) program and external road safety leadership, described in more detail by Murray and Watson (11), which helped to leverage both internal and external funding to continue the program. The online risk assessment-led approach continues to provide a highly cost effective targeting of interventions and training. This is especially so for the 5% of drivers who are most 'at-risk' and the 70% of drivers identified as being at 'medium risk'. The visibility, integration and Indexing of assessment outcomes with training, collision and other data continues to allow BT to target risks in the most effective way, which has led to reduced fleet calamity and Employer's Liability (EL) insurance premium and an improved insurer relationship. The project has also established BT's safety credentials – 65,000 drivers risk assessed is the world's biggest ever program, based on scientific evidence (6, 9). Linked to this, there is evidence that the program has allowed BT to be proactive in its relationships with and management of key Government agencies and

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regulators, who now often seek guidance from BT. Finally, the approach and policies are not exclusive and have been benchmarked against www.fleetsafetybenchmarking.net, shared with and copied by many organisations (12, 14).

One limitation of such case study based research is the extent to which the drop in claims frequency and severity has been due to external factors, such as economic factors, the oil price, weather changes, increased police and camera-based enforcement, hot-spot remediation programs, vehicle safety features and reduced emergency response times. For this reason, the collision rate for the UK over the same period was also considered as part of the outcomes evaluation process. Initially discussed in Darby et al (9), the data has been updated in Figure 6 to show the nine year trends in the number of BT claims (excluding glass) compared with police compiled STATS19 data of the number of collisions reported in Britain where someone was killed or seriously injured (KSI).

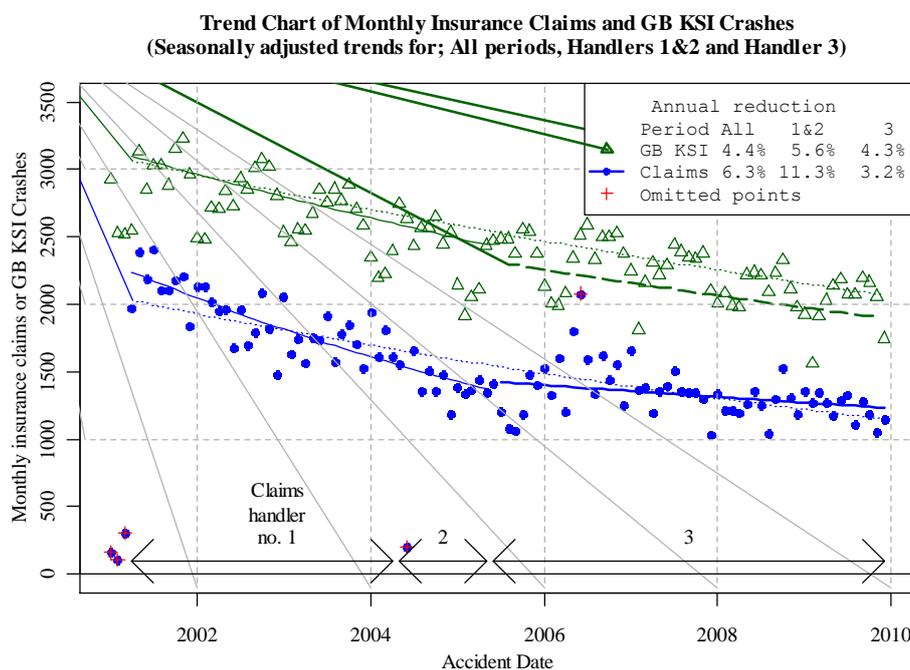


Figure 6 - Trends in vehicle insurance claims (excluding glass) and GB KSI collisions

Detailed analysis of annual figures reveals that BT claims reduced faster than the KSI rate, but have plateaued in recent years for a number of reasons, particularly worsening winter weather conditions and the need for greater asset utilisation in times of economic uncertainty.

ONGOING AND NEXT STEPS AND THE IMPORTANCE OF MANAGEMENT COMMITMENT TO ROAD SAFETY

Despite the comprehensive program described to date, and the many positive evaluation outcomes a key lesson from the project is that there are no silver bullets in fleet safety. For this reason BT continues to take a holistic approach based on a clear application of well researched policies, procedures and processes – framed by the Haddon Matrix. To support this, the following initiatives are currently areas of key focus:

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- Bringing BT's Starting Point program onto a new Global platform with sophisticated risk data-warehousing, Driver Indexing and OneToOne interventions.
- Re-launch of Starting Point directly engaging over 30,000 drivers in road safety during 2009 and 2010.
- New online Starting Point modules including electronic licence checks, Risk Foundation policy assessment and Eco Driver training being built into business cycle.
- Motor Risk Management Forum re-invigorated and further embedded into BT's DNA.
- Fleet policy (known as C021) successfully reviewed against Haddon Matrix and re-launched pan-BT.
- Continued external recognition – through presentations, Driving for Better Business, European Road Safety Charter and European Transport Safety Council PRAISE project.
- Detailed project management, implementation and communications timetable in place for next 12 months.
- Behind the wheel training process successfully revised and embedded – targeting specific safety and environmental risks based on need.
- Dynamic online non-driver compliance management process successfully implemented.
- BT Republic of Ireland launched – as pilot for rest of world implementation 2011-12. Benelux and USA due for launch next.
- Annual Safe Driver of the Year Competition significantly improved – including business case, risk-based online first round open to all, participant engagement and feedback - engaging over 12,000 entrants in 2009, and 2010.
- Management workshop program on safe driving re-developed, re-branded and re-launched.
- Vehicle telematics being trialled against a pilot group in one BT Line of Business.
- Family members program rolled out to coincide with Road Safety Week for each of the past 5 years, and again scheduled for 2011-12.

DISCUSSION AND LESSONS FOR RESEARCH, INDUSTRY AND POLICY MAKERS

Overall, BT's work-related road safety in the supply chain program can be seen to have been a sustained success on a number of levels, but particularly with regards to road safety processes and outcomes. The influence of the Haddon framework (Figure 1) can be identified throughout the case.

The process described provides important lessons that researchers, and managers in other organisations worldwide, can learn from. These were highlighted by Wallington (13) and Holt (14) and are seen as critical areas for organisations seeking to develop such a program. The BT case suggests that the attitude and aptitude of managers in organisations are vital to the success or otherwise of a work related road safety program. In every case in which the authors have been involved over many years, committed management champions at all levels have been important in overcoming the many potential barriers that exist to improving safety. Typically, these are individuals or groups of managers who have identified the problem, and engaged the organisation and their colleagues to assess the risks and overcome the barriers to develop targeted safety programs.

BT's success is felt to have been based on a number of factors, not least its ongoing desire to develop the program further. Key elements of this are the drive towards continual improvement, regular process and outcomes benchmarking against others and the identification of gaps requiring improvement. New angles to push the road safety message are also constantly being identified, most recently for example by linking with other important issues such as the green agenda and reducing costs/improving efficiency during times of recession.

The case also offers lessons for policy makers, suggesting that occupational road safety is an opportunity to target a large number of drivers through the workplace (11). Many authors cited throughout this paper have recommended how this could be undertaken at both policy and organisational levels.

Based on the BT case, one particular area for policy makers to explore is the potential of fleet auditing and benchmarking, framed by the Haddon Matrix, as a method of improving supply chain safety and risk management outcomes. The case supports previous research and experience which suggests that auditing and benchmarking can provide policy makers with an opportunity to further enhance road safety. Examples of successful programs such as the Fleet Safety Benchmarking and Driving for Better Business projects are already available, and could be explored further by policy makers, researchers and practitioners alike.

CONCLUSIONS

The paper has applied a chronological case study approach, aimed at addressing an important gap in the research literature and business practice. It has outlined an effective process and framework for improving occupational road safety. This was undertaken through a case study of BT, a company that has invested time and resources in a program over a seven year period based on worldwide research and experience. Overall, BT's program is low cost, sustainable, and replicable, having been benchmarked against and copied by many organisations, with clear statistically verifiable impacts on road safety and enhanced reputational benefits. Additionally it has directly influenced over 65,000 people and supported major collision and cost reductions over the seven years it has been running.

The paper has provided a well-researched, systems-based, framework for aiding research, in the form of the Haddon Matrix, and using a combination of sound science and experience to inform real world, practical situations. It has also highlighted many of the key success factors and lessons from which others can learn and seek to emulate. Although not without some limitations, the case has identified pointers for researchers, practitioners and policy makers, and provides a model for turning research on occupational road safety into practice.

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