Institution: Loughborough University

Unit of Assessment: D32: Art and Design: History, Practice and Theory

Title of case study: Enhancing international road safety policymaking to reduce crashes and serious injury

Period when the underpinning research was undertaken: 2004-2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof. Pete Thomas	Professor in Transport Safety	1994 – present
Prof. Andrew Morris	Professor of Human Factors in Transport safety	2001 – present
Dr Ashleigh Filtness	Senior Lecturer of Human Factors in Transport Safety	2016 – present
Dr Jo Barnes	Senior Lecturer	2005 – present
Ms Ruth Welsh	Senior Lecturer in Traffic Safety	1999 – present
Ms Rachel Talbot	Senior Research Associate	2004 – present

Period when the claimed impact occurred: 1st August 2013 – 31st December 2020

Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact (indicative maximum 100 words)

International road safety policy aims to reduce road death and casualties. Historically, road safety policy effectiveness has been limited by difficulty accessing scientific knowledge and an absence of comparable national statistics. Loughborough University-led research developed new methods and open access tools to inform international, national and local level road safety policymaking, through the provision of an evidence-base and standardised approach to effectively monitor crashes. This has led to (1) crash data being uniformly recorded across the EU and (2) adoption of the tools by key international stakeholders including the European Commission, Organisation for Economic Co-operation and Development (OECD), World Bank and World Health Organisation (WHO), used routinely by policy makers to develop effective road safety strategies worldwide.

2. Underpinning research (indicative maximum 500 words)

Following adoption of the UN Sustainable Development Goals (2011) to reduce traffic casualties, local/national/global road safety policymakers began searching for reliable/detailed evidence to support their goals. Yet knowledge and data were unstructured, un-analysed or unavailable. Our research team (Thomas, Morris, Filtness, Barnes, Welsh & Talbot 2004–2020) led a programme of research developing consistent European-level crash data resources, making traffic safety knowledge available and applying it to pressing road safety challenges. The programme incorporated large Loughborough-led EU funded projects, SafetyNet (2004–2008, €13m), DaCoTA (2010–2012, €7m) and SafetyCube (2016–2019, €6m) and several smaller projects. Research collaborators included academic institutes and car manufacturers from across the EU. Close engagement with policy makers was maintained to ensure usable outcomes. The principal outcomes of this research programme were (1) compatible EU road safety data and (2) synthesised road safety knowledge.

(1) Compatible EU road safety data

Road crashes are a global concern with 1.35 million people killed each year. The World Health Organisation recognises crashes as the only non-disease issue in the top ten causes of death.

There is consensus that better data systems were needed to allow development and refinement of crash countermeasures. Research undertaken within the Loughborough-led SafetyNet project identified that data from EU Member States was not compatible, meaning aggregated data on crashes were not valid and EU-wide safety policies could not be established. SafetyNet produced a new Common Accident Data Set protocol that was adopted by the EU and implemented in Member States enabling all 28 sets of crash data to converge over time **[R1]**. The team also identified obstacles in classifying and enumerating non-fatal injury casualties due to different Member State reporting systems. A new criterion was developed by the Loughborough-led project based on research with hospital and police injury data. The subsequent Loughborough-led SafetyCube project, undertook additional research comparing estimates of serious injury frequency using different methodological approaches based on institutional data. This improved on previous estimates **[R2]**. Further research, led by Loughborough, developed a new standardised method for estimating severity of injuries based on International Classification of Diseases, commonly used in epidemiological settings **[R3]**. Research was extended internationally within SaferAfrica **[R4]** examining road safety challenges in Africa and identifying that poor safety data resources, inadequate strategic direction and capacity gaps were prevalent in many African countries. The Project developed new methods to specify crash details validated by Government experts from six African countries.

(2) Road safety knowledge synthesis

The Loughborough-led DaCoTA project (Data Collection, Transfer and Analysis) revealed road safety policymakers lacked access to information about the nature of safety challenges thus preventing evidence based policy-making. Following detailed research into effective road safety management procedures we developed a new harmonised methodology to capture existing information and synthesise policy-relevant information **[R5]**. Further research undertaken in the SafetyCube project found a major need amongst policymakers for specific information on the magnitude of road safety risks and the effectiveness of countermeasures. SafetyCube developed new comprehensive approaches including meta-analysis methods that enable policymakers to access up-to-date scientific data to evaluate casualty reduction effectiveness and cost-efficiency of measures **[R6]**.

3. References to the research (indicative maximum of six references)

R1: Yannis, G., Evgenikos, P., Chaziris, A., Broughton, J., Lawton, B., Walter, L., Hoeglinge, S., Leitner, T., Angermann, A., Bos N., Hemdorff, S., Hollo, P., Tecl, J, Thomas, P, Rackliff, L, Sammartin, J & Pace, JF. (2008). Building the European Road Safety Observatory. SafetyNet. D. 1.14 CADaS-The common accident data set. Project report for the European Commission https://repository.lboro.ac.uk/articles/report/Building_the_European_Road_Safety_Observatory_SafetyNet_D_1_14_CADaS_-_The_common_accident_data_set/9353768

R2: Perez, K., Weijermars, W., Bos, N., Filtness, A., Bauer, R., Johannsen, H., Nuyttens, N., Pascal, L., Thomas, P. & Olabarria, M. (2019). Implications of estimating road traffic serious injuries from hospital data. Accident Analysis & Prevention, 130, 125-135 https://doi.org/10.1016/j.aap.2018.04.005

R3: Barnes, J., Loftis, K. L., Jones, L., Price, J. P., Gillich, P. J., Cookman, K., ... & Brennan, M. (2020). Development of an expert derived ICD-AIS map for serious AIS3+ injury identification. Traffic injury prevention, 21(3), 181-187 https://doi.org/10.1080/15389588.2020.1725494

R4: Thomas, P., Welsh, R., Folla, K., Laiou, A., Mavromatis, S., Yannis, G., Usami, D., Meta, E & Persia, L. (2018) Recommendations for a common data collection system and definitions [SaferAfrica D4.2] Project Report for the European Commission https://hdl.handle.net/2134/35127

R5: Jähi, H., Muhlrad, N., Buttler, I., Gitelman, V., Bax, C., Dupont, E., Giustiniani, G., Machata, K., Martensen, H., Papadimitriou, E., Persia, L., Talbot, R., Vallet G. & Yannis G (2012). Investigating road safety management processes in Europe. Procedia-Social and Behavioral Sciences, 48, 2130-2139. https://doi.org/10.1016/j.sbspro.2012.06.1186

R6: Martensen, H., Diependaele, K., Daniels, S., Van den Berghe, W., Papadimitriou, E., Yannis, G., Van Schagen, I., Weijermars, W., Wijnen, W., Filtness, A., Talbot, R, Thomas, P., Machata, K., Aigner Breuss, E., Kaiser, S., Hermittee, T., Thomson, R., & Elvik, R. (2019). The European road safety decision support system on risks and measures. Accident Analysis & Prevention, 125, 344-351. https://doi.org/10.1016/j.aap.2018.08.005

The research was supported by €4.2M awarded to Loughborough University from the European Commission following highly competitive processes. For example, with 87 competing proposals SafetyCube was the only project funded under MG-3.4-2014. All EU projects are closely scrutinised and peer reviewed while the research is active and upon completion all were regarded as highly successful by the peer reviewers and EC project officers.

4. Details of the impact (indicative maximum 750 words)

The Loughborough-led research programme on enhancing international road safety policymaking assists policymakers in optimising their policy approach, understanding road safety challenges, and facilitating use of evidence in policy making. These impacts have been achieved through numerous pathways including end-user engagement throughout the research programme culminating in the creation of three open access online tools (European Road Safety Observatory (ERSO), African Road Safety Observatory (ARSO) and European Road Safety Decision Support System (DSS) and provision of data. Each tool was independently awarded a Prince Michael of Kent International Road Safety Award in the relevant year post-release.

Impact 1 – Enabling comparable international crash injury data

Our research underpinned provisions of new methods to monitor crashes and ensure crash data are uniformly recorded. Without standardised approaches to crash injury data it is impossible to set benchmarks for road safety improvement and compare between countries. Historically, road safety policy focused on fatality reduction, because fatalities are easier to count than serious injuries. Across the EU a standardised approach to national crash data sets is now used as a result of our research creating the Common Accident Dataset (CADaS) **[S1]** this facilitates analysis of trends and targets. Also, as a result of our research, it is now possible to count 'serious' injury crashes in a standardised way across the EU, whereas historically countries applied different definitions to injury severity which resulted in the same injury being classified as 'Serious' in one country but 'Minor' in another. This significant problem, tackled by the research conducted in "SafetyNet" (2004 – 2008) **[R1]**, underpinned the adoption of the new definition of "Serious injury" (Maximum Abbreviated Injury Scale, MAIS 3+) **[R3]**.

In 2015, the EC conducted evaluations of its 10-year road safety strategy and identified a need for increased focus on counting, recording and reducing MAIS 3+ injuries. This conclusion was supported by the OECD which called for Member countries to adopt the SafetyNet MAIS 3+ definition **[S2]**. SafetyCube research **[R2]** evaluated the practicability of the definition; subsequently in 2017 the EC endorsed the Valletta Declaration **[S3]** calling for the EU to strive towards improved serious injury data based on the SafetyNet MAIS 3+ definition, and a 50% reduction of MAIS3+ injuries by 2030. This approach is now standard practice e.g. the UK Department for Transport has been counting injury crashes using MAIS 3+ since 2015 **[S4]**.

SafetyNet enabled the convergence of disparate national crash datasets, enabling benchmarking and target-setting between countries. The CADaS (adopted by the EC in 2008) continues to act as the basis of crash statistics for all EU Member States **[S1]**. Subsequently, CADaS became recommended practice by the World Road Association **[S5]**, World Bank **[S6]** and German Ministry for Economic Cooperation and Development **[S7]**.

Impact 2 – Enabling better decision making through evidence-based tools for road safety policymakers worldwide

Our research underpinned development and adoption of open access evidence-based tools for road safety policymaking. Previously, policymakers had limited access to scientific knowledge. This posed problems as policy was introduced without an evidence-base making it ineffective.

The SafetyNet project conceptualised a Road Safety Observatory as a repository for knowledge and scientific data detailing effectiveness of measures to improve road safety which founded the ERSO and its adoption by the EC. The impact from this adoption is realised during the reporting period.

The DaCoTA project **[R5]** enhanced ERSO by strengthening the Observatory, thereby benefiting road safety by enabling policymakers to make evidence-based decisions. ERSO was awarded the Prince Michael of Kent International Road Safety Award in December 2013 and according to the WHO **[S8]** was emulated in Argentina, Bolivia, Brazil, Columbia, Czech Republic, France, Greece, Guatemala, Honduras, Tunisia and the UK. The success of policy decisions is attributable to being underpinned by evidence. ERSO, DSS and ARSO all give policy makers free access to evidence in an understandable format. By 2016, traffic fatalities in Europe had reduced by 42% compared to 2007, as a result of national and European policy decisions.

The SaferAfrica project **[R4]** evaluated knowledge and data needs in several African Countries developing the ARSO. Following an inter-ministerial agreement in Marrakech (November 2018) it was agreed that ARSO would continue with African leadership and financial support of the World Bank, Federation Internationale d'Automobiles (FIA) and International Transport Forum (OECD) **[S9]**.

In addition, the DSS **[R6]** was developed by SafetyCube (2018) and scientific evidence targeted at policy makers became accessible to enhance knowledge of risks, measures to improve safety considerations for infrastructure, vehicles, road user behaviour and road safety management (traditionally infrastructure had been the primary focus). Policymakers now actively use the DSS e.g. The UK Department for Transport in the current UK Road Safety Statement **[S10]**.

On reviewing the DSS (2018) both the European Commissioner for Transport and Mobility **[S11]**, and the President of the FIA recognised the SafetyCube legacy.

5. Sources to corroborate the impact (indicative maximum of 10 references)

S1: **European Commission** Reference Guide for a Common Accident Data Set. Version 3.6 - September 2017. Document history and introduction confirms source as SafetyNet project.

S2: The **International Traffic Safety Data and Analysis Group (IRTAD)** Road Safety Annual Report 2015, OECD Publishing, Paris. http://dx.doi.org/10.1787/irtad-2015-en

S3: **Council of the European Union** Draft Council conclusions on "Road safety endorsing the Valletta Declaration" 7629/1/17 REV 1 TRANS 125 (Valletta, 28 – 29 March 2017) http://data.consilium.europa.eu/doc/document/ST-8666-2017-REV-1/en/pdf

S4: **Department for Transport**, UK 2015. Reported road casualties GreatBritain:2015 annual report.

S5: Road Safety Manual of the **World Road Association** 2016 updated 2019. Part II Road Safety Management, Chapter 5 Safety Data https://roadsafety.piarc.org/en

S6: **World Bank** and South East Europe Transport Observatory (SEETO) Road Safety Inspection Manual. Common problems – shared solutions. 2016.

S7: Sustainable Transport: A Sourcebook for Policy-makers in Developing Cities for Urban Road Safety, **German Ministry for Economic Cooperation and Development**, 2017

S8: **World Health Organisation**. Global Status Report on Road Safety. 2018 https://www.who.int/publications-detail/global-status-report-on-road-safety-2018

S9: Press release on the **World Bank / Federation Internationale d'Automobiles (FIA)** Adoption of the SaferAfrica Road Safety Observatory. 23/05/18 https://www.worldbank.org/en/news/press-release/2018/05/23/first-african-observatory-to-tackle-the-continents-road-safety-crisis

S10: **Department for Transport**, UK 2019. The Road Safety Statement 2019 A Lifetime of Road Safety Moving Britain Ahead. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/817695/road-safety-statement-2019.pdf

S11:	Testimonial from the **European Commissioner for Transport and Mobility**, and the President of the **Federation Internationale d'Automobiles** (FIA) in support of the European Road Safety Decision Support System. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/556648/rrcgb2015-03.pdf