


# Women in Engineering Conference

ROYAL ENGINEERS' MUSEUM, GILLINGHAM, KENT

20 SEPTEMBER 2018



# Inspirational Women in UK Road Safety

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## Bridget Driscoll



## Bridget Driscoll



### THE FIRST FATAL MOTOR CAR ACCIDENT.

At the Crystal Palace on Monday evening Mrs Driscoll, of Croydon, was knocked down by a motor car, which went over her head, death quickly ensuing.

- ▶ Only a handful of petrol cars in Britain when Bridget Driscoll took a trip to the Crystal Palace, 17 August 1896. She was the UK's first traffic fatality.
- ▶ At the inquest, a witness gave evidence that the car went at a 'tremendous pace', like a fire engine - 'as fast as a good horse could gallop'.
- ▶ "The driver was doing 4mph when he killed Mrs Driscoll and that he had rung his bell and shouted." The car's maximum speed, the inquest heard, was 8mph but its speed had been deliberately limited.
- ▶ Mrs Driscoll had hesitated in front of the car and seemed "bewildered" before being hit. The driver "did not seem to understand what he was doing" and zig-zagged towards her.
- ▶ There were conflicting reports about the speed and manner of the accident, the jury returned an accidental death verdict.
- ▶ He had been driving only three weeks at the time and - with no licence requirement - had been given no instruction as to which side of the road to keep to.

# Scaring the horses

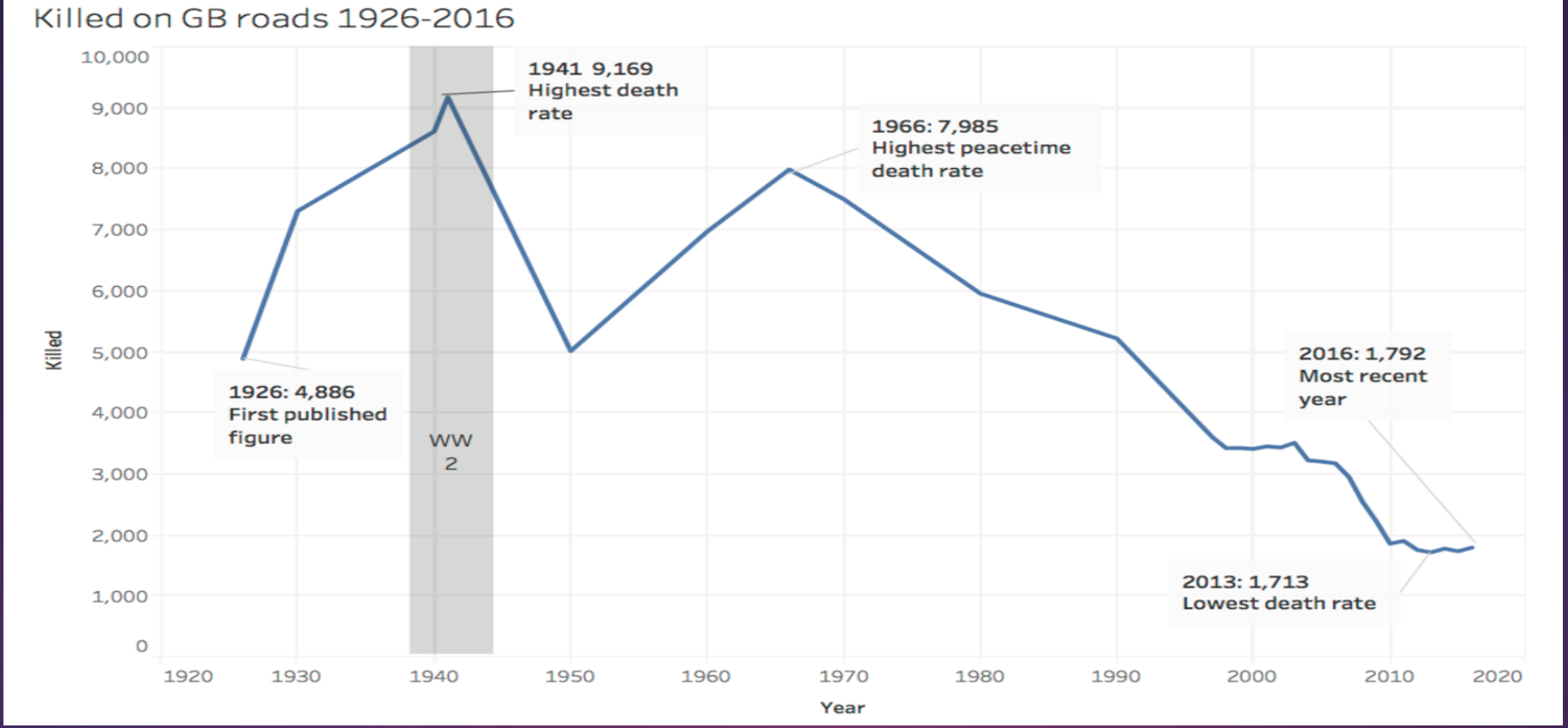
- ▶ The Victorians had no real sense of health and safety. They accepted the death as a horrible tragedy. Nonetheless, there was "quite a lot of anti-car feeling" in the UK at the time.
- ▶ People didn't want drivers running around the country scaring horses, there were fewer than 20 petrol cars in Britain at the time.
- ▶ This was reflected in the rules of the road at the time. To the frustration of early drivers, the nation's first cars were subject to strict safety laws which had been designed for steam locomotives weighing up to 12 tonnes.



# Red flags

- ▶ Each vehicle had a team of three; the driver, the fireman - to stoke the engine - and the flagman, walked 60 yards in front waving a red flag to warn horse-drawn traffic of the machine's approach.
- ▶ Flag requirement was ditched in 1865 and walking distance reduced to 20 yards
- ▶ Speed limits of 2mph in towns and 4mph in the country remained in place
- ▶ Mrs Driscoll died a few weeks after a new Parliamentary act - designed for the new and lighter petrol, electricity and steam-driven cars - raised the speed limit to 14mph, and completely scrapped the flagman role.
- ▶ **The coroner said he hoped hers would be the last death in this sort of accident.**





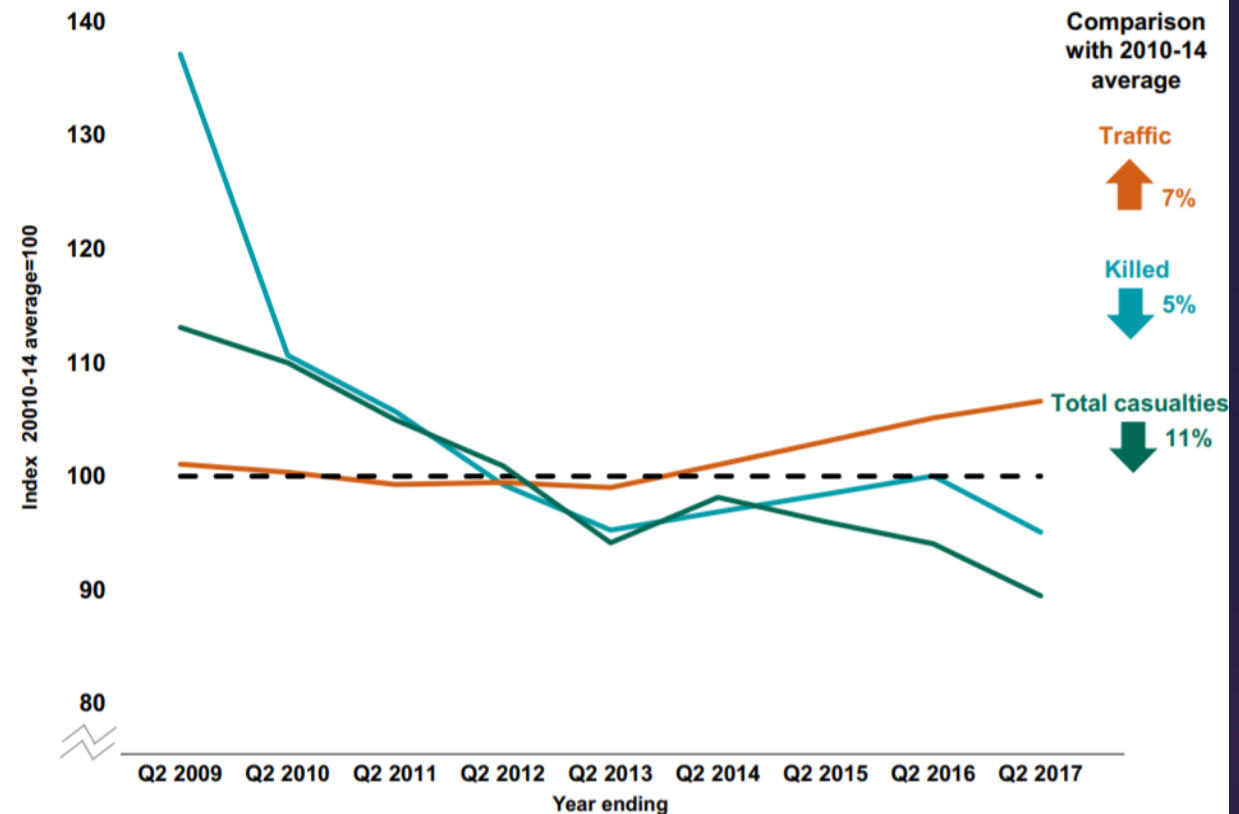
Little did he know how times would change over the following century, with the Royal Society for the Prevention of Accidents estimating more than 550,000 people have been killed on Britain's roads since then.

Almost 4,000 people are killed on the world's roads every day, according to the campaigning charity RoadPeace

# 2017 estimates

- ▶ 27,130 killed or seriously injured (KSI casualties) in year ending June 2017
- ▶ 176,500 casualties (all severities) 5% decrease
- ▶ Traffic flows increased by 1.4%
- ▶ Casualty rate per vehicle mile decreased by 6%

Chart 1: Killed casualties, total casualties and traffic compared with the 2010-14 average, GB, years ending June 2009 to 2017



[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/654962/quarterly-estimates-april-to-june-2017.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/654962/quarterly-estimates-april-to-june-2017.pdf)



# The Past

- ▶ Until relatively recently Road Safety in the UK has been a success story.
- ▶ Engineers, educators and enforcement agencies worked together over decades to reduce casualties on UK roads from a peak of 356,000 in 1970 to 179,592 in 2016.
- ▶ Women have played a significant part in this success...

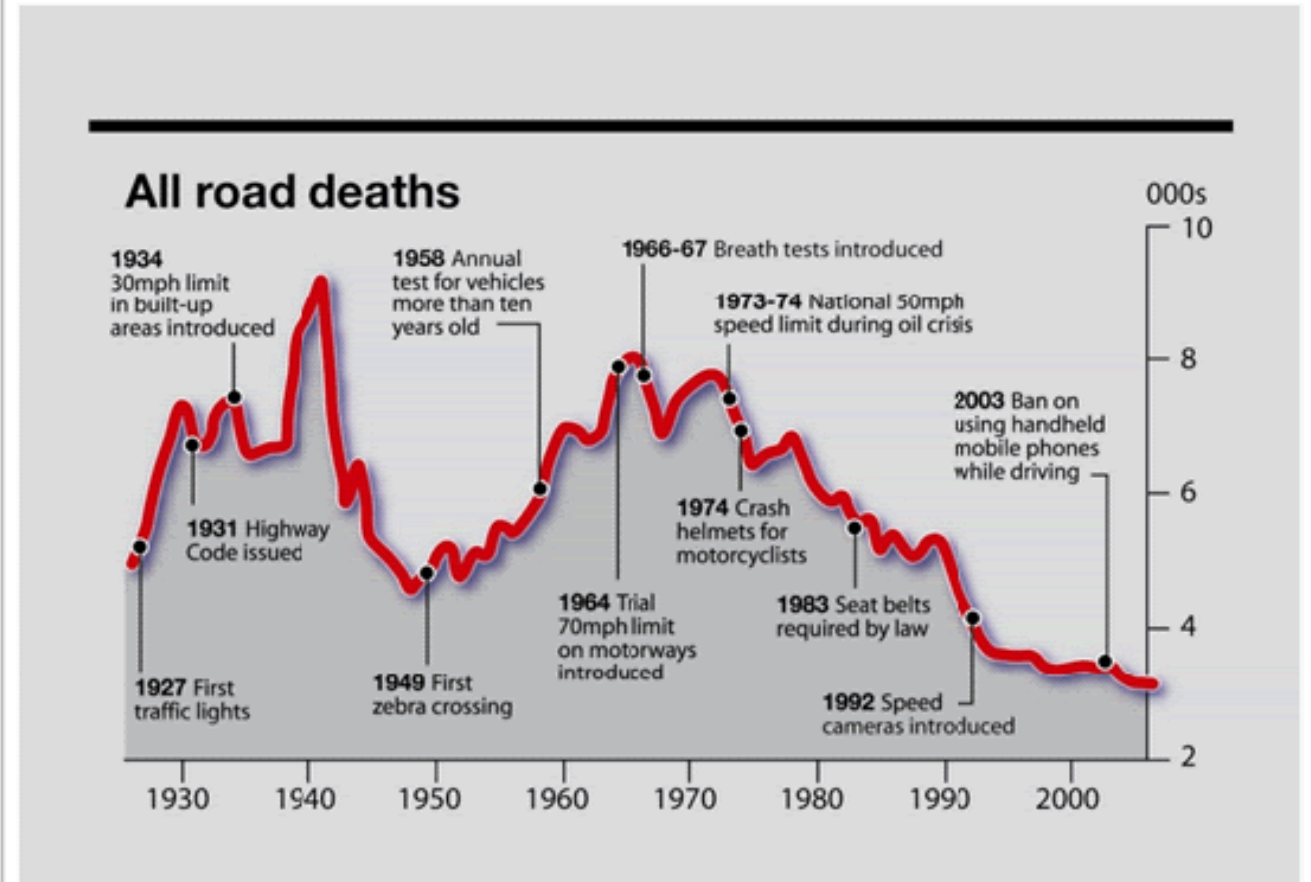


Figure 4:

# Dr Barbara Sabey ISO

- ▶ 60+ years of road safety research, advocacy and application
- ▶ Recruited by the RRL as a physics graduate in late 1940s to join the Traffic and Safety Division
- ▶ Expert in wide range of disciplines that contribute to reducing deaths, injury and damage on our roads.
- ▶ Head of TRRL's Accident Investigation Division, led the systematic understanding of the complex pattern of collision occurrence which informed safety research and policy.
- ▶ Responsible for the pioneering TRRL multidisciplinary On-The-Spot studies of collisions through which contributory factors associated with the vehicles, the road environment and the road users were identified, led to the setting in 1987 of the first road casualty reduction target for GB.
- ▶ Pioneering on-the-road survey work - first surveys of the blood alcohol levels of drivers
- ▶ Understanding collision occurrence in urban areas showed road safety engineering at hazardous locations must be complemented by other engineering measures to reduce all accidents.
- ▶ Devised and lead the Urban Safety Management Project of the 1980s, a full-sale trial in which low-cost area-wide measures were developed and effects assessed, led to IHT guidelines on USM, the Gloucester Safer City Project, and many calming measures seen in towns and cities.
- ▶ Led the writing of guidelines on Safety Audit and on Rural Safety Management
- ▶ Internationally influential in road safety in New Zealand and Australia,



**“There can be few, if any, who have done more to make our roads among the safest in the world.”**

<http://www.pacts.org.uk/2013/04/dr-barbara-sabey-a-tribute/>

# Ginny Clarke

- ▶ First female chief highway engineer at the Highways Agency
- ▶ Technical advisor for work on the trunk road network
- ▶ Senior civil engineer at the Agency
- ▶ Responsible for a 250 strong team of civil engineers, traffic analysts, electrical engineers, environmental engineers and highway designers.
- ▶ Focus on road safety, standards and research.



<https://www.raeng.org.uk/policy/diversity-in-engineering/diversity-and-inclusion-at-the-academy/celebrating-leading-women-in-engineering/ginny-clarke>

# Tricia Hayes

- ▶ Director General for Roads, Motoring and Devolution in the Department for Transport (DfT)
- ▶ Joined DfT in 1987. Focussed on transport policy, with roles covering almost all modes of transport; including rail, road, aviation and sustainable travel issues.
- ▶ From 2013 to 2016 was the UK's Director of Aviation, responsible for all aspects of domestic and international aviation policy, including aviation security.
- ▶ Head of the Policy Profession within the Department for Transport, chairs the DfT Board sub-committee on Strategy, and is the Board level Champion for Race and Faith.
- ▶ Originally from Northern Ireland, and is married with 3 children. Fellow of the Chartered Institute of Highways and Transportation.
- ▶ Main areas of responsibility are:
  - ▶ development of policy in relation to roads, traffic, road safety, sustainable travel, bus travel and logistics
  - ▶ managing the department's relationship with local government and its contribution to the localism agenda
  - ▶ managing the government funding of, and relationship with, Transport for London
  - ▶ sponsorship of DfT's motoring agencies



# Heather Ward

- ▶ Honorary Senior Research Fellow at UCL and is also an independent consultant.
- ▶ Road safety research at UCL for the EU, National and Local Governments, the OECD, UK charities and Trusts, and research organisations in Australia.
- ▶ Has worked in the international and national health area in relation to inequalities especially in injury occurrence and prevention.
- ▶ Chaired a NICE (National Institute of Health and Clinical Excellence) Group which published Guidance on Strategies to Prevent Unintentional Injuries among under 15s.
- ▶ Key experience is in evaluation of road engineering schemes; speed management; vulnerable road user safety; inequalities, and in understanding and improving data quality for all injuries but especially those relating to road casualties.



# More Inspirational women...





What is the Value to Society of a  
Safe And Serviceable Highway  
Network...?





# A global problem...

- ▶ 1.3 million people die each year on the world's roads
- ▶ 20 - 50 million sustain non-fatal injuries
- ▶ Road traffic crashes are a major cause of death among all age groups and the leading cause of death among those aged 15–29 years
- ▶ 93% of road deaths occur in low and middle income countries which have only 54% of the world's registered vehicles
- ▶ VRUs account for half of all road traffic deaths (higher in poorer countries).

WHAT WORKS?



# Global solutions



**Speed reduction:** 1km/hr increase in mean speed = 3% increase in crashes = 4-5% increase in fatalities

**Alcohol reduction:** more alcohol = more crashes and deaths but on 34 countries (29% of world population) have drink driving laws

**Safety helmets:** reduces deaths by 40% and severe injury by 70% only 44 countries have effective motorcycle helmet laws

**Seat belts:** reduces injuries by 45-50% (front) and 25-75% (rear) 105 countries have best practice seat belt laws

**Child restraints:** reduces serious injury by up to 80%. Only 53 countries have child restraint laws

**Emergency services:** Access to emergency care dramatically improves outcome

**Vehicle safety standards:** 7 Key regulations (UN World Forum for Harmonisation of Vehicle Regs) only 40 countries have adopted all 7 (35 are high income)

**Highway Design:** Highways that are well designed and meet basic safety standards have a big impact on casualty numbers. Peds, cyclists and PTWs most important.



Where highways has taken  
me...



# Industrial Trainee

Surrey County Council





# Graduate Engineer

Royal Borough of Richmond Upon Thames





# Assistant Engineer/Senior Engineer

Bromley Borough Council





# Principal Assistant Engineer

Broxbourne District Council







# Road Safety Audits\*



Principal Engineer  
Hertfordshire County Council





# Service & Strategy Manager

InterRoute JV / Highways Agency





# Project Director

Mott MacDonald





Senior Lecturer

University of Greenwich





Who works in highways and transportation?



Roles in highways and transportation...



Why should you consider this  
sector?



UK Skills Shortage List

The UK Skills Shortage list gets released annually. We try and keep this list as current as possible.

Engineering occupation shortages

Transportation and Highways Engineers

Engineers who are required to have a transport-related degree, or a degree and at least 2 years relevant experience from a civil background in the following sub-sectors:

- Traffic Engineer or Transport Planner
- Highways Design Engineer or Highways Planning Engineer

Skills shortages across the industry...

Transport and Highways Jobs

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surveyor transport network

Sign In

England's roads have been kept in check

Interesting news about the national road condition.



Highways

Improving the asset, saving the cash

Improving road standards in a time of austerity.



Highways

Plugging the highways skills gap

Joanne Garwood 25 February 2015



Throughout the highways industry, and indeed the wider construction sector, businesses are quickly coming to understand that the single greatest threat to their recovery is no longer a deficiency in demand. Rather it is the lack of available skills to meet what demand there is.

Register

Register to get issues and changes and highways

Register





Opportunities  
around the  
world

# Also

- ▶ Well paid
- ▶ Varied
- ▶ Challenging
- ▶ Multidisciplinary
- ▶ Useful
- ▶ Worthwhile
- ▶ Interesting
- ▶ Technical / Non-technical
- ▶ Outdoors / Indoors
- ▶ Fun!





What are the routes to a  
career in highways?

# Route to a professional career in highways...

**Secondary Education**  
Good GCSEs including Maths and English

**Tertiary Education**

- HE – Cognate degree
- FE – relevant qualification
- Apprenticeship

**Work Experience**

**Professional Review**

- Chartered Engineer
- Incorporated Engineer
- Engineering Technician

# What helps?



## Transport experience

- Driving Licence(s) car, MC, HGV, PSV
- Passenger
- Pedestrian, cyclist



## Health & Safety

- First Aid
- Drugs and Alcohol free



## Audit skills

- Environmental, Quality



## Communication skills

- Interpersonal
- Presentation
- Languages



## Visualisation

- 3d Modelling
- Computer games
- Design, art, sculpture



- ▶ Be observant and curious about transport
- ▶ Get the best qualifications you possibly can
- ▶ Develop strong professional skills (communication, team working, flexibility, resilience, problem-solving, reliability etc.)
- ▶ Get work experience – e.g. internships, placements, work shadowing



# Recap

- ▶ Bridget Driscoll
- ▶ Road safety the story so far
- ▶ Inspirational Women in highway engineering
- ▶ Road safety a global problem
- ▶ Careers in highways engineering and road safety



Sims





Questions?



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FCHIT PGCertHE FHEA

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