Guidelines for Motorcycling

1 Introduction
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1.1 Scope of these Guidelines

Motorcycles have been a feature of our roads for well over a hundred years. During that time they have served as a functional mode of transport, an economical alternative to the car, a workhorse and even a lifestyle icon. Their popularity has risen and fallen in concert with a number of diverse social and economic factors. Sustained interest in motorcycling throws the advantages and disadvantages of motorcycling into sharp relief – the most obvious of the latter being safety. Although there have been several improvements to casualty rates over the last decade, riders are roughly 35 times more likely to be killed and over 50 times more likely to be seriously injured in a reported road collision than car occupants.

However, it is important to remember that the functions and benefits presented by the motorcycle for over a century are still valid and valuable. A vulnerable mode of transport is not the same as being an undesirable one.

1.1.1 The 2005 Guidelines

In 2005 the Institute of Highway Engineers produced a set of award-winning guidelines for highways engineers and road safety professionals to encourage greater awareness of the needs of powered two-wheelers and effective interventions to improve safety. This updated version of those guidelines reflects changes in policy and advances in technology and knowledge.

1.1.2 Policy

Motorcycles have long provided a legitimate, cost effective and relatively low-polluting form of transport for commuting, work or leisure purposes. However, their riders are susceptible to serious injury even in low-speed collisions.

Policy makers, planners, road designers and maintenance engineers have sometimes overlooked their specific safety needs. Raising awareness of those requirements among these professionals is crucial and these Guidelines are a step in that direction.
1.1.3 Road Design and Traffic Engineering

Road designers and traffic engineers need to understand how some design features, benign to other road users, can present a particular hazard to motorcyclists.

It is important to keep exploring new ideas and trialling initiatives, despite any perceived controversy. For example, in 2012 Transport for London granted motorcyclists permanent access to bus lanes on the majority of the city’s red routes in what may, at the time, have been perceived as a bold move.

Traffic calming measures can be very effective in reducing the number of injury collisions, especially in residential areas. Motorcyclists are no more exempt from the intended effects of traffic calming than any other road user and, arguably, suffer disproportionately from the unintended effects. Such unintended effects can seriously compromise safety.

1.1.4 Road Safety Campaigns

Road safety campaigns are a vital component to improving the safety record of motorcyclists. Attitudes play a major role in determining rider behaviour, irrespective of age or trip purpose. Measures designed to influence behaviour must address these attitudes and take account of the spirit and individuality often expressed in choosing a motorcycle as one’s mode of travel. Riders respond better to messages that relate to their own perspective and are likely to ignore general “must do” or “must not do” messages.

1.1.5 Travel Plans

A Travel Plan is an access strategy used to manage multimodal access to the workplace. It encourages modal shift from single-occupancy private cars by improving alternative travel options and promoting wider use of sustainable transport. Incentives and disincentives to persuade and support people to use alternative commuter modes can often achieve this.

Motorcycles are an affordable alternative mode of transport where public transport provision is weak or non-existent and where distances make walking and cycling unrealistic. Consequently, motorcycling should be a common feature of all Travel Plans.
1.1.6 Parking

Parking provision is an important tool in local transport policies as well as traffic management and crime reduction. It is also essential for any motorcycle user. Motorcycle parking can be provided on-street or off-street, in surface or multi-storey parking and by commercial site operators, local authorities, employers, retailers and colleges.

1.1.7 Road Maintenance

A good quality surface provides a safer, more pleasant experience for all road users but this is particularly relevant to motorcyclists. Factors affecting motorcyclists include skid resistance, surface contamination and debris, drainage gullies, service covers, road markings and road studs. All of these factors should be examined from a ‘motorcyclist inclusive’ viewpoint.

1.1.8 Road Safety Audit

Statutory obligations aside, good highway and traffic engineering practice separates safety auditing and user auditing. The latter focuses on improving infrastructure provision for sustainable modes in order to encourage modal shift. However, it is good practice for safety auditors to take a multi-modal approach to the process, giving special attention to safety implications for vulnerable road users such as equestrians, cyclists and pedestrians. Motorcyclists sometimes have a lower profile in this ‘vulnerable user’ category because their higher speeds may lead auditors to push them into the same group as twin-track motor vehicles. This is a serious misunderstanding. The dynamics of motorcycles and vulnerability of their riders make motorcycling a unique mode within the traffic mix which requires separate and informed consideration by designers and auditors.

1.2. Naming Conventions

Throughout the Guidelines the term “motorcycle” is used to cover all forms of powered two wheelers (PTW) from the smallest mopeds, through scooters to the largest sports and touring machines.

Although the terms “twin track vehicle” and “single track vehicle” are far from elegant, they remind us of the fundamental design differences between motorcycles and other motor vehicles. Failure to understand these differences leads to misunderstandings at policy, design and operational levels and under-performance of the road environment.
1.3 Types of Motorcycle

There are a wide variety of machines available today all of which have their own characteristics of design, typical engine size, handling and style. Similarly, the riders of a given type of machine may be very diverse. A motorcycle is a two-wheeled vehicle and, with the exception of mopeds, riders must be aged 17 or over.

1.3.1 Standard or Naked

These vehicles cover a wide range of the performance spectrum of power-handling and braking. Sometimes called ‘retro’ machines they are typically used as practical transport, but with no fairing (or simply a small handlebar fairing) and have an upright riding position.

1.3.2 Custom

Also known as “cruisers” or “choppers”, typically these are often long with a low saddle, have high handlebars and forward footrests. The emphasis is on appearance and style, displaying high levels of polished chrome.

1.3.3 Trail/Enduro/Adventure Sport

Also known as “dual-sport” bikes, these combine features needed to ride on or off road. Larger machines often share features with touring motorcycles (below), for example fairings and larger luggage compartments.
1.3.4 Touring

These machines generally have large engines and are designed for relaxed, long-distance riding. Typical features include a more comfortable seating position for rider and pillion, luggage capacity and weather protection via fairings with a fixed or adjustable windscreen.

1.3.5 Sports

These machines may be designed to mimic racing motorcycles, with full fairings and low handlebars. Alternatively, they may have partial fairings and more practical rider and pillion seating, with medium-rise handlebars for longer distance travel. They tend to have medium to large capacity engines.

1.3.6 Scooters

Representing about 25% of motorcycles on the road, scooters differ significantly from most other motorcycles because of their bodywork and ‘step through’ chassis design. Engines are usually small to medium capacity, integral to the rear suspension, and normally with automatic transmission.
1.3.7 Mopeds

In law, mopeds are motorised two-wheel vehicles with an engine capacity of less than 50cc and a maximum speed of 28mph. Riders must be aged 16 or over.

1.3.8 E-bikes

Electric motorcycles (sometimes called “e-bikes”) are powered two-wheelers with an on-board rechargeable electric battery. Current designs are akin to mopeds but rapid advances in design are seeing more scooter-like ‘step through’ chassis designs. Over the next 5-10 years it is likely that e-bike designs more closely resembling ‘conventional’ motorcycles will come to market enabling motorcycles to be even more environmentally-friendly.

Do not confuse these with “electric bicycles” which are normal bicycles with an electric motor to be used to assist the rider’s pedal power. The key difference is that electric bicycles retain the ability to be pedalled by the rider.

1.4 Sustained Interest in Motorcycling

In 2012 there were just over 1.2 million licensed motorcycles in Great Britain and 2.8 billion miles were travelled by motorcycle (DfT 2013).

Whilst motorcycle traffic levels have dropped since the 1980s, there has been a 70% increase in the number of licensed motorcycles since 1994 (DfT, 2013). The rapid increase peaked around 2008/9 and has levelled off since (most certainly due to economic forces).
Motorcycling use has some simple but important characteristics. It is a particularly seasonal activity, with a considerable increase in distance travelled during April to September. Further, the majority of motorcycling trips (60%) are for work, business or education purposes compared with only 27% for car trips (DfT 2009).

1.5 Motorcycle Casualties and Collisions

Safety is undoubtedly the most common issue associated with motorcycle use among transport professionals and the public.

The nature of enclosed twin-track vehicles (eg cars and vans) offers far more protection in the event of a collision. According to the DfT, motorcycles (when compared with car occupants) are:

- roughly 35 times more likely to be killed in a collision; and
- over 50 times more likely to be seriously injured in a reported road collision (RRCGB – 2012).

Positively, however, the number of motorcyclist fatalities (328) represents a decrease of 9% between 2011 and 2012 and is the lowest on record. Further, the number of reported casualties (19,310) represents a 15% decrease on the 2005-9 average (RRCGB – 2012).
That said, as a mode of transport, the frequency of motorcyclist deaths and casualties remain significantly disproportionate to use.

Loss of control was recorded as the contributory factor in 16% of motorcycling collisions, making it the most common factor in 2012. Further, 78% of all motorcycle collisions involved another vehicle.

What about dangers to pedestrians? In single vehicle collisions, 20% of motorcycle collisions involved a pedestrian. In comparison, 38% of cyclist collisions involved a pedestrian.

1.5.1 Motorcycle Casualty Rates

It should be noted there are no disaggregated targets for motorcycles. A number of improvements in motorcycle design and rider training have taken place over the last decade and the overall long-term casualty rate for motorcycles has generally improved, despite the largely urban nature of motorcycle use and greater volume of larger vehicles within the same road space.

While there is no place for complacency in road safety, it is important to recognise that a key measure of safety, the rider casualty rate per billion miles (a proxy for rider exposure to risk,) showed a year-on-year improvement between 2002-2007. Although the rate has fluctuated since then, 2012 saw a 23% decrease in the casualty rate over a 10 year period and a 31% reduction in the fatality rate on the 2005-2009 average. As positive as that sounds, in the same year, for every billion vehicle-miles driven on our roads, there were 6 deaths. However, this figure jumped to 112 deaths for motorcycle riders. A hugely disproportionate gulf in risk clearly remains.

![Casualty rates](image)

1.5.2 In Context

Although the Compendium of Motorcycling Statistics has not been updated since 2009, the DfT’s Reported Road Casualties, Great Britain Annual Report 2012 provides data on wide-ranging issues which highlight some important trends, characteristics and risks for motorcyclists.
1.5.2.1 Urban and Rural Areas

Urban and rural areas experience different patterns of motorcycle collisions. The severity of these collisions also varies depending on the hazards encountered and the speed of the vehicles involved.

The fatality rate (per billion miles) on rural roads is approximately twice as high as that of on urban roads. Conversely, the ‘all severity’ collision rate on rural roads is just over half that of on urban roads (DfT 2013).

Too often the focus for intervention will be on rural casualties. Clearly strategies need to be targeted in both rural and urban areas. In congested areas, motorcycling is a popular alternative to the car and rider vulnerability in towns and cities needs to be addressed with similar vigour to strategies in rural areas where motorcycle safety has a higher profile.

1.5.2.2 Time of Year

Generally speaking, in numbers terms there are more motorcyclist deaths and injuries during the spring and summer. However, as noted above, given the seasonal nature of motorcycling, there are considerably more riders on the roads at this time of year who can potentially get hurt. The motorcycling casualty rate shows that, per billion miles ridden, there are more casualties in the winter months – most notably due to the poor weather conditions. Many riders (eg commuters) travel all year round. It is important that if seasonal factors do influence policy that the full picture is understood.

Causalities and casualty rates – by month
1.5.2.3 Locations

Sixty nine per cent of all motorcycles involved in collisions in 2012 were reported as “at a junction”. This means that junctions are the most common collision location and, according to studies, these are most likely to be precipitated by another road user. Many collisions take place at junctions where the driver of a motor vehicle may have “looked but did not see”. There are also a minority of riders who ride inappropriately and expose themselves to higher risk.

14% of motorcycle collisions involved overtaking a moving or stationary vehicle and 10% were reported as ‘going ahead’ on a bend.

1.6 Taking Action

In both rural and urban areas, motorcycle casualties are linked to a variety of factors involving engineering and planning, behaviour, levels of skill and attitudes of motorcyclists and other road users. Compared to car users, motorcyclists’ physical exposure results in their considerable vulnerability.

It is important to consider both individual schemes and packages of measures that integrate to form an overall local motorcycle strategy, with clear targets to reduce casualties, mitigate vulnerability and influence rider and driver attitudes. Working in partnership can also be very effective. Chapter 2 (Policy) and Chapter 4 (Road Safety Campaigns) considers these issues in depth and provides case study examples.