Implications of a “Road User Hierarchy” for Road-Safety Law

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Abstract. The UK’s Highway Code is a *de facto* manual for road use. In 2022, a revised version was released including a hierarchy of road-user responsibility, imposing the greatest duty of care on those in charge of vehicles capable of causing greatest harm in the event of a collision. In the context of a brief survey of walking, road safety and prevailing traffic law in the UK, it is asked how this hierarchy might be turned from well-intentioned words (as now) into a means of improving road safety. A possible way forward is presented in which penalties for traffic offences would be based, in part, on the momentum of the vehicle involved. The possible benefits and disadvantages of this approach are discussed, leading to a tentative conclusion that it would lead to a net reduction in injury. The paper concludes with discussion of recently released sentencing guidelines that appear to follow broadly the idea proposed.

Keywords: Walking, Vulnerable road users; Road safety; Traffic law; Justice; Moral philosophy

1 Introduction

A revision to the Highway Code, the UK’s sourcebook on the conduct of road users, has introduced a hierarchy of road-user responsibility, matching a duty of care to the level of harm that a given vehicle can cause [1]. This presents a novel opportunity to reconsider traffic law: can it be modified to support the achievement of the hierarchy’s aims?

This paper begins with essential context on walking in the UK, prevailing traffic law, and the Highway Code itself. We then discuss the principle of revising traffic law to reflect the implications of the hierarchy, before proposing and deliberating on one possible approach.

2 Background

2.1 Walking and road safety in the UK

As in most high-income countries, walking has declined over time in Great Britain: its mode share for the journey to work is estimated to have been 59.4 per cent in the

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late 19th Century as compared with 7.9 per cent a century later. In the more recent past, its share of travel for all purposes decreased from approximately 35 per cent in 1975/6 to 27 per cent in 2018 [2], though there has been a slight recovery since. The reasons for this are well understood: changing land-use patterns, increasing wealth leading to car ownership and use, in turn leading people to make location decisions incompatible with walking for key journeys, and a deteriorating walking experience. This is partly circular, as increased car travel has made walking less pleasant, prompting more people to transfer to car.

Approximately 1,650 people die on the roads each year in the UK (ignoring the effects of the COVID-19 pandemic). In 2022, of the 1,695 fatalities, 376 were pedestrians [3]. This number has declined in recent years against a background of relatively steady traffic, which translates into a reducing casualty rate when using distance as the measure of exposure (Figure 1). Thus, walking has become objectively safer in Great Britain in recent years, but this has not been reflected in an increase in volume. With respect to perceived safety, three per cent of those surveyed who said they were walking more cited “safety improvements to my area” as a reason. This can be compared with the 59 per cent who chose the commonest reason, “to improve my health”. Safety did not feature amongst the reasons given by those who reported walking less [4]. Attitudinal surveys indicate a high level of support for lower speeds: 71 per cent of those surveyed in 2019 were in favour of a 20mph limit in residential streets, with 14 per cent opposed [5]. We can conclude that there is a (weak) link between improving safety and walking levels and that it seems to depend more on perceived than objective safety.

In summary, we can say that perceived danger deters walking in the UK to some extent. If action were taken that improved perceived safety, an increase in walking may be seen. If that action also led to increased *objective* safety, we would see the dual benefits of reduced injury and increased walking.

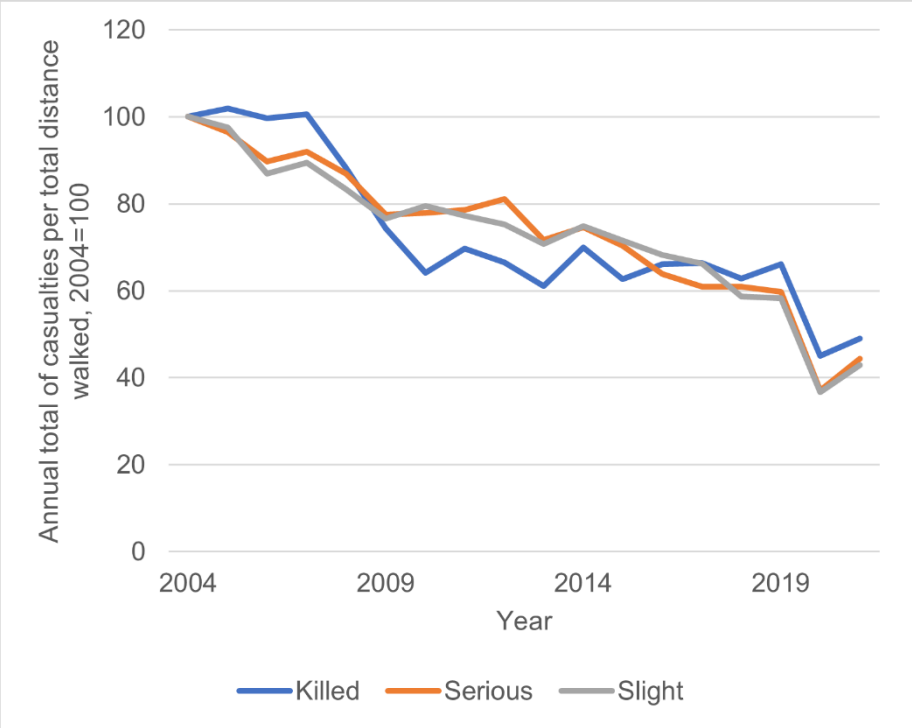

Figure 1: Rate of pedestrian casualties per unit distance walked, by severity, GB: 2004 to 2021 (Index 2004=100). Source: Department for Transport

2.2 Driving offences in Great Britain

In the UK, there is general consistency in traffic law across Great Britain (England, Scotland and Wales), with Northern Ireland having slightly different arrangements. For simplicity, in this section the law in Great Britain is discussed.

There is a wide range of driving offences, characterised by the Crown Prosecution Service as ranging "from 'document' offences, for example when a person fails to produce a copy of their driving licence or other documents, to cases involving the death of another person" [6]. They can be categorised as either conduct crimes or result crimes, the latter involving damage, injury or death. Conduct crimes involve behaviour on the road that is considered likely to increase risk of harm, such as driving whilst under the influence of alcohol or other drugs, exceeding the speed limit, and using a mobile phone whilst driving. Included in this set are *careless or inconsiderate driving*[2] and *dangerous driving.* Careless driving is defined in the Road Traffic Act 1988 as

[2] Also referred to as "driving without due care and attention" but generally known simply as careless driving.

being committed when driving "falls below what would be expected of a competent and careful driver" [7, Sec. 3ZA]. Meanwhile, "a person is to be regarded as driving dangerously if (and…only if)—

(a) the way he drives falls far below what would be expected of a competent and careful driver, and

(b) it would be obvious to a competent and careful driver that driving in that way would be dangerous" [7, Sec. 2A].

There is a further component of dangerous driving related to vehicle condition. The offence of dangerous driving was introduced with the Road Traffic Act of 1988 to replace reckless driving and there has been ongoing debate since – many struggle to see how to interpret "far below" as opposed to "below" what would be expected of a competent and careful driver, e.g. [8]. Discussions of the wider issue in the jurisprudence literature raise questions of the interpretation of negligence and recklessness, referring to individuals' advertence or not to risk and their concern or otherwise for the interests of others [9]–[11]. It is a complex issue and one that is not limited to driving. But campaigners frequently object when a driver is convicted for an offence involving careless driving, claiming that the circumstances point clearly to the driving having been dangerous [12], [13]. Meanwhile, it is acknowledged that there may be systematic leniency towards drivers in the courts: "it has been suggested by some magistrates and legal advisers that courts are too often imposing short discretionary disqualifications (of less than 56 days) where 12 or more points have been imposed. This avoids a longer period of disqualification that would result from totting-up (at least 6 months)" [14, p. 8]

These concerns extend to sentencing. In England and Wales, judges and magistrates follow guidance from the Sentencing Council concerning the range of penalties they may apply for a given offence. In Great Britain, penalties for traffic offences involve combinations of penalty points, fines, disqualification, vehicle confiscation, community orders and custodial sentences. The first of these operates on a cumulative principle: when a driver reaches 12 points, they will ordinarily be disqualified from driving for a period. The maximum sentence for causing death by dangerous driving was recently increased to life imprisonment, amongst other changes [15]; meanwhile, there was a recent consultation on revised sentencing guidelines for 12 traffic offences [16]; we discuss its outcomes in the conclusion. As with the offences themselves, sentencing is a matter of considerable debate, with complaints that heinous traffic offences are treated far more leniently than would be the case if a vehicle had not been involved [17].

Of relevance to this discussion is the fact that most traffic offences assume the driving of a motorised vehicle. Thus, when someone riding a bicycle caused the death of a pedestrian in 2016, they were convicted of an offence involving "wanton and furious driving" [18], which dates back to the 19th century, because none of the standard traffic offences could be applied.

In summary, the set of traffic offences in Great Britain is contested, as are the legal processes in which they are used, and the resultant penalties imposed. This may have implications for the question of modifying traffic law to reflect the hierarchy. If the status quo were stable and generally considered satisfactory, it may be difficult to make

a case for change. As it is, the status quo is a subject of extensive debate and is in a state of flux. On the one hand, this is helpful because the paper's mission is unlikely to be resisted on the grounds that it would cause unwelcome disruption. On the other, it introduces an additional challenge: how to apply acceptable changes to a set of statutes and practices that are themselves the subject of widespread disagreement?

2.3 The Highway Code and its evolution

The Highway Code was first published in the UK in 1931 [19]. It is a combination of selections of existing law and normative statements concerning how road users should conduct themselves. The legal statements take the form of "you must" or "you must not", whilst the normative statements are presented as "you should/should not", reflecting the fact that they are not based on legislation. Despite this, normative statements in the Highway Code often play a part in legal proceedings, with verdicts taking account of whether a road user followed the Code [1]. And the Highway Code has an important status amongst road users: those taking a driving test must demonstrate accurate knowledge of it, and it is popularly thought of as the definitive statement of traffic law, despite being a handbook rather than statute.

The Highway Code is periodically updated and the version published in early 2022 included significant changes relating to walking and other forms of active travel. The most significant from the perspective of this paper is the emergence of a hierarchy of road-user responsibility, supported by new rules for giving way. The hierarchy is presented in stages, beginning with a reminder about the relative risks faced by different categories of road user: "the road users most likely to be injured in the event of a collision are pedestrians, cyclists, horse riders and motorcyclists". The crucial clause follows: "those in charge of vehicles that can cause the greatest harm in the event of a collision bear the greatest responsibility to take care and reduce the danger they pose to others". Publicity produced in association with the release of the new version placed road users into three categories, with those at the top, including pedestrians, "more likely to be injured [in the event of a collision]" and those at the bottom having "greater responsibility"[3] [1].

Various active-travel campaign organisations had called extensively for the hierarchy and were jubilant about its inclusion in the 2022 Highway Code, e.g. [20], though there was disappointment about the extent and impact of marketing conducted afterwards to raise awareness [21]. The most significant point is that there is no prospect of change to traffic law to reflect the hierarchy. A long-standing promise to review traffic offences in the round, made originally in 2014, has not yet been honoured, creating an expectation that the hierarchy will remain in the domain of "should" rather

[3] In full, the top category contains *people walking (including children, older adults and disabled people)*; the middle category contains *people riding horses, people cycling, people driving horse-drawn vehicles and motorcycles*; the bottom category contains *people driving cars and taxis, people driving vans and minibuses, people driving large goods and passenger vehicles*.
(https://twitter.com/transportgovuk/status/1487365002843627521)

than “must”, with very limited resulting change in road-user behaviour to be expected. Moreover, it is for now far from clear what specific actions or behaviours a driver is meant to adopt in order “to take care and reduce the danger they pose to others”.

3 A possible approach

Having set the scene, in this section we discuss how the traffic justice system might be revised to reflect the hierarchy and some potential benefits and disadvantages of proceeding in this manner.

There appear two natural paths to arriving at penalties that, *ceteris paribus*, reflect the varying responsibility of road users to take care: expansions/revisions to the set of road-user offences; or revisions to the guidance to magistrates and judges in the setting of penalties, taking into account the characteristics of vehicles involved. In saying this, we acknowledge that a principle of *presumed liability* would be an obvious way of attempting to impress upon road users in the “greater responsibility” category the need to take care. We do not discuss the idea further in this paper, noting only that a justice system operating optimally should deliver the same penalties whether liability is presumed or not.

Modifying the offences is easy to discount for two reasons: first, vehicles continue to evolve but the law is slow to change, so it is likely the new laws pertaining to *Vehicle Type A* would over time become outdated or even obsolete. Second, we have seen that existing laws create an unhelpful dichotomy between driving a motorised vehicle and travelling by other means when it is desirable for a single law to cover ostensibly similar acts: creating new offences based on vehicle types would exacerbate this problem. The second path – revised guidance to those determining penalties – avoids these difficulties and instead has the advantage that there is already typically a range of penalties available, from which the magistrate or judge chooses according to the circumstances of the case.

How to create a sound link between the facts as they pertain to the hierarchy, and the penalty? The temptation of course is to set a series of guidelines, one for powered two-wheelers, one for heavy goods vehicles (HGVs) and so on but this would miss the point: a given vehicle does not cause a particular level of harm *because* it is that vehicle type, but because of its characteristics. Such an approach would also probably be subject to the same need for regular updating, as vehicle types and characteristics evolved. It makes more sense to attempt instead to base the penalty on the potential (or actual) harm, *irrespective of vehicle type*. In saying this, we acknowledge that certain vehicle characteristics (e.g. high ground clearance on an HGV) can prove material to the extent of injury sustained in a collision, so we shall return to this point later.

The fact that speed is strongly and positively correlated with injury has long been understood. But the emergence of the hierarchy illustrates that a model based on speed alone is incomplete. Is there another quantity that predicts with reasonable accuracy the probable harm that would result from a given vehicle colliding with a reference road user, *ceteris paribus*? To the extent that there is, this quantity is momentum, being the

product of mass and speed[4]. This is because, in a collision, the momentum of one "participant" to a great extent determines the impact experienced by another. More specifically, if two vehicles collide end-on, the change in speed of each vehicle is the closing speed multiplied by the proportion of the total mass contained by the *other* vehicle[5]. Thus, a person struck by a bus travelling at 20mph will suffer greatly more trauma than a person struck by a powered two-wheeler travelling at the same speed, *because the bus weighs much more*. This is a major reason why heavier vehicles are associated with greater degrees of injury in collisions.

Let us assume that culpability is positively linked to potential or actual harm – the greater the harm that might result from a person's actions, the more culpable those actions are taken to be and the greater the punishment meted out, *ceteris paribus*. Given the relationship between momentum and potential harm, culpability (and therefore penalties) would thus be positively linked to the momentum of the offender's vehicle. In practical terms, we consider two cases.

In the case of careless or dangerous driving, the momentum[6] of the offender's vehicle could act as a material consideration alongside the range of factors that are already taken into account, such as the characteristics of the offender, their vehicle and the wider circumstances. In two cases that were identical except for the momentum of the offender's vehicle, the judge or magistrate could be guided to apply a stronger penalty to the offender whose vehicle had the higher momentum.

The second case is speeding. Momentum could be used in a similar way here: the penalty could be positively correlated with the momentum of the offender's vehicle. But this seems harsh: in effect, an HGV driver and a rider of a powered two-wheeler, both exceeding the speed limit by 1mph, would be penalised very differently, with the vast bulk of the penalty imposed on the HGV driver resulting from "legal momentum", being the momentum that their (heavy) vehicle accumulated whilst within the speed limit. Instead, given that penalties for speeding are generally based on the extent to which the offender's vehicle was exceeding the posted limit, it would be more consistent as well as fairer to set penalties in proportion with "excess momentum", being the product of vehicle mass and *excess* speed. This would mean that penalties still reflected vehicle mass – the HGV driver's excess momentum would be much greater per additional mile per hour than that of the motorcyclist – but there would be no default penalty for "legal momentum". This raises a separate question of whether speed limits themselves should be revised to reflect more fully the masses of various types of vehicles[7] but that is beyond the scope of this inquiry.

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[4] Momentum is formally the product of mass and velocity (the combination of speed and direction) but the simplification is reasonable in this context.

[5] Simplified for purposes of illustration.

[6] If the illegal driving took place over a period, reference momentum could be calculated using the peak speed attained during that period, for example.

[7] Speed limits currently vary to some extent by vehicle type on some roads in the UK, and certain heavier vehicles are required to be fitted with speed limiters [22].

3.1 The limitations of using momentum

We mentioned above the high ground clearance of HGVs as being a relevant factor in collisions: it is much less likely that an individual will be "dragged under" the wheels of a car than those of a lorry, and this factor is strongly correlated with degree of injury. Heavier vehicles tend also to be larger, bringing increased chances of a driver not seeing another road user, a problem exacerbated by the high positions of typical cabs in goods vehicles. These facts all demonstrate the limitations of using momentum alone to bring the hierarchy of road-user responsibility to bear in traffic law.

We have also chosen to look at collisions in a simplistic way up to now, ignoring their wider characteristics. For example, a motorcyclist may drive poorly, leading a bus driver (say) to swerve and leave the road with potentially grave consequences for people both inside and outside the vehicle, but leaving the motorcyclist unharmed. We must therefore ask whether such simplifications are sufficiently problematic as to make the idea presented here untenable. We return to this point in the next section.

3.2 Discussion

We have argued that penalties should be set in proportion to the potential harm associated with a given act. If momentum is accepted as a reasonable proxy for potential harm caused in a collision, making momentum one of the determinants of penalties appears to follow logically. But, whilst the above syllogism may be sound, we must remind ourselves of the key phrase from the Highway Code: "those in charge of vehicles that can cause the greatest harm in the event of a collision bear the greatest responsibility to take care and reduce the danger they pose to others". Would momentum-based penalties cause this category of road users to take care and/or reduce the danger they pose to others?

There is evidence that road-user behaviour is influenced by penalties [23], [24]. The relationship is of course complex and only a naïve policy maker would expect an increase in penalties to have an immediate, proportionate and lasting effect on behaviour. A crucial factor is that road users will only adjust their behaviour if they are *aware* of revised penalties. The probability of prosecution is also a major factor in determining behaviour: a stiff penalty will only deter people from transgressing if they perceive they are likely to receive it. Again, there is some evidence that prosecution rates do influence behaviour [25]. And we must bear in mind that a great deal of road-user behaviour takes place unreflectively: a driver may know about the new penalties and the likelihood of getting caught but, if their behaviour is habitual, will probably carry on as before. In sum, the potential safety benefits of introducing the changes discussed is contingent on several related variables. This, though, would be true of any proposal to revise the penalties for road offences, so is not automatic grounds to discard the idea.

We have raised above the concern that momentum only partially captures the risks posed by larger vehicles. We have also mentioned the complexity of road traffic and the possibility that harm can be caused indirectly, with the actions of someone who perhaps does not "bear the greatest responsibility" causing a collision involving a heavy

vehicle, but in which the driver of the latter vehicle is blameless. Would the introduction of penalties based partly on momentum be likely to lead to perverse results that would outweigh any primary safety benefits? In response, we must first observe that those setting penalties have some latitude – if the circumstances of a given case made it seem unjust to apply a momentum-based penalty, the magistrate or judge could adjust accordingly. The answer also depends partly on how momentum-based penalties compared with what went before. If penalties faced by those in charge of "low-responsibility" vehicles fell compared with the status quo[8], this could result in riskier behaviour on their parts, with unwelcome consequences. This scenario does not therefore seem desirable. A perhaps more likely scenario has penalties remaining as before for "low-responsibility" categories and being increased for "high-responsibility" categories. Subject to remarks above concerning the relationship between penalties and behaviour, this could be expected to lead to more cautious behaviour on the part of those in charge of "high-responsibility" vehicles, resulting in some reduction in collisions. Injuries stemming from factors such as high clearance should not obviously go up; if anything, they would be likely to fall given increased caution on the part of this category of drivers. Could increased caution amongst this group embolden other road users? It has been much discussed that pedestrians and cyclists might play "chicken" with automated vehicles in the expectation that the automated vehicle would always yield [26]. Perhaps the same thing would happen here? It is certainly possible but we suggest instead that so-called vulnerable road users tend not to rely on the kindness of drivers; we therefore conclude tentatively that casualties could be expected to drop following the introduction of momentum-based penalties.

In closing, it is necessary to note that road safety is only one consideration when changes are being contemplated to penalties for road offences. There is the crucial matter of individual freedoms – can the imposition of greater penalties for offences be justified in societal terms? In other words, would the potential road-safety benefits outweigh the costs borne by offenders? And there is the more practical issue of knock-on effects for the justice system itself. For example, UK prisons cost £47,434 per prisoner in 2021-22 [27], a significant consideration when any potential increase in custodial sentences is being contemplated.

4 Conclusion

In June 2023, the Sentencing Council for England and Wales published the response to its consultation on motoring offences [28]. This coincided with a series of changes to sentencing guidelines which came into effect on 1st July. Sentencing guidelines tell those judging a case what to take into account when deciding on any penalty. They tend to include "aggravating factors", factors that would ordinarily be considered to make the offence more reprehensible and therefore imply a more severe punishment.

The revised sentencing guidelines for a range of serious traffic offences now include as aggravating factors: "victim was a vulnerable road user, including pedestrians, cyclists, horse riders, motorcyclists etc" and "driving a LGV, HGV or PSV etc" e.g.

[8] This might arise if there was a desire to keep the mean penalty as before.

[29]. Whilst this is clearly not equivalent to basing penalties on momentum, the parallels are obvious, particularly as vehicle speed is also a consideration when determining sentence. One might be tempted to claim that these changes are directly attributable to the updated Highway Code but it is not as simple as that: for example, the previous version of the guideline for dangerous driving included carrying a heavy load as a factor indicating higher culpability [30]. But this nevertheless represents an extension of that principle, through the inclusion of a factor based on victims being vulnerable road users; further, "carrying a heavy load" is poorly defined, whereas identifying specific vehicle types gives those determining sentences clearer instructions. So, whether or not they are motivated by the hierarchy of road-user responsibility, these changes are clearly consistent with its spirit.

It is no surprise that momentum has not been embraced as a grounds for judging the severity of a driving offence – whilst it is a simple concept in physics, that does not make it intuitive for non-physicists which, we imagine, most magistrates and judges are. One cannot quibble, though, that sentencing guidelines now feature the relative mass of users/vehicles involved in a collision as well as the speed of the offending vehicle. That they are not formally multiplied is hardly cause for complaint.

The proof of the pudding will be in the eating, of course. Will magistrates and judges apply these aggravating factors and will they do so consistently? Will any differences in penalty based implicitly on momentum be discernible to road users such that a deterrent effect is detected? Our future research agenda is clearly laid out.

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