RURAL ECONOMY AND CONNECTIVITY COMMITTEE

RESTRICTED ROADS (20 MPH SPEED LIMIT) (SCOTLAND) BILL

SUBMISSION FROM THE ALLIANCE OF BRITISH DRIVERS AND ERIC BRIDGSTOCK

20mph - ROAD SAFETY

INTRODUCTION

The recently published Atkins AECOM/Maher 20mph research study[^1] is equivocal on the road safety effects of 20mph limits; while being broadly supportive of the concept, evidence gathered and analysed to date provides little evidence of casualty reductions greater than (and in some cases actually inferior to) those achieved on average nationally on roads retaining the current default 30mph limit. Also, poor compliance is very likely where the appropriate supporting road engineering is absent.

“... Based on the evidence available to date, this study has found no significant change in collisions and casualties, in the short term, in the majority of the case study areas (including the aggregated set of residential case studies). While some individual case study areas show a reduction in collisions/ casualties, when background trends are accounted for, these results are based on very small sample sizes and it is not possible to attach any confidence to their significance.”[^2]

FAILURE OF 20MPH TO DELIVER THE CASUALTY REDUCTIONS ANTICIPATED BY SOME

In 2009, much was made of a 22% reduction in all injuries in Portsmouth, attributable to introducing 20mph, even though that was actually worse than national trend when adjusted for traffic volume. Less was said about their increase in serious injuries by 57% (89 to 143) in 2011.

ABD proffers the following reasons for the failure of 20mph to reduce casualties:

• Vulnerable road users are given the perception that 20mph zones are safer than 30mph areas and behave less cautiously in them, while actuals speeds are typically reduced by perhaps 1-2mph

[^1]: 20mph Research Study Highlight & Full Reports to DfT by Atkins, AECOM & Maher, UCL, November 2018.
[^2]: Highlight 20mph Research Study Report to DfT by Atkins, AECOM & Maher, UCL, November 2018; p.64: under “Early Safety Outcomes”
• Drivers have to devote a more attention to speedometer-watching to keep below 20mph. This increased workload degrades driver observation, hazard perception and hazard response.[3]

• A distracted driver striving to maintain 20mph is more likely to collide with a vulnerable road user at 20mph than an observant one travelling at higher speed, who is able to brake to reduce impact speed and/or take evasive action.

• Only 2% of UK adult & 0.6% of UK child pedestrian casualties are fatalities.

• From the Ashton-Mackay curve, right, the average impact speed of UK RTAs involving pedestrians is already typically 20mph or lower.

RELATIONSHIP BETWEEN SPEED AND COLLISIONS

It is often quoted that a 1mph in mean speed brings a 5% reduction in risk or number of collisions, or some similar figure. That is self-evidently invalid – it would mean that a reduction of mean speed from, say, 70mph to 50mph would remove all risk (20mphx5%=100%), which is clearly not the case.

This claim stems from report TRL421[5], which expressed this sort of relationship between speed and collisions but, crucially, never identified a causal link, undermining its credibility.

Further, a report by Goran Nilsson[6] making similar claims is often misquoted. It states that the conclusions were based on slower speeds but all other factors unchanged (i.e. no change to speed limit, no enforcement, etc.). Changes of speed limit, enforcement, etc. invalidate its application.

Most drivers (85% traditionally) will travel in accordance with the conditions for the safety of all road users. Forcing lower speeds introduces hazards which are never accounted for. Slower speed does not automatically imply safer – see Solomon Curve[7], left.

THE CONTRIBUTION OF LAW-ABIDING DRIVERS

Reports of 20mph schemes sometimes include some examples where switches to 20mph were associated with reductions in collisions or casualties “significantly greater than would otherwise have been expected”. Let’s suppose that the 20mph

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[7] Accidents on main rural highways related to speed, driver, and vehicle, David Solomon, 1964
limit was responsible for those reduced collisions/casualties – how could that have happened?

In a case where the limit was reduced from 30mph to 20mph, the implication is that some incidents, which would otherwise have happened, have been prevented by the 20mph limit. These must be attributable to law-abiding drivers, who are now travelling at or below 20mph. As those same law-abiding drivers would presumably have been driving within the previous [30mph] limit, they must have been having accidents that were caused by them driving at inappropriate speeds within that limit. The numbers of such incidents would be very small, and we would welcome an example of an accident where that was the case and where, therefore, it could be credibly be claimed that the incident would not have happened if 20mph had previously been implemented. Without such an example, there is no reason to believe that the 20mph limit was responsible for any falls in collisions or casualties. Such examples can be found for every true road safety intervention, where their link to collision prevention is clear.

It is often convenient to associate introduction of 20mph with casualty reductions better than local or national trend but those reductions have invariably been brought about by engineering changes (eg. junctions, crossings), changes in traffic volume, regression to the mean, etc. Indeed those reductions could well have been greater had the speed limit not been reduced.

ANALYSIS OF AN ACCIDENT/COLLISION

In all walks of life, safe is defined as being free from harm [to people] or, given that few things (and especially road safety) can ever be totally safe, safe is defined as presenting an acceptable level of risk of harm [to people].

To make roads safer, we must reduce risk to road users, with success measured in the level of casualties. Preventing casualties/collisions requires understanding what causes “accidents” in the first place.

The recipe for an accident involves a hazard (or hazardous condition) AND a triggering event. A hazard could be a sharp knife in the washing-up bowl, or a football on the stairs. No accident will occur if no-one puts their hand in the bowl, or uses the stairs (they would constitute triggering events).

In road safety, hazards can originate in the:

1. driver – tired, drunk/drugged, poor eyesight, using phone
2. vehicle – dirty/misted windows, not properly lit at night, badly maintained
3. weather conditions or time of day – fog, snow/ice, darkness, twilight, bright sun, high winds
4. road layout – unfamiliar, confusing, missing signs, too many signs
5. other road users – vehicles, cyclists, pedestrians, animals.

Triggering events are numerous and varied: misjudgement, poor observation, lapse of concentration, unsignalled manoeuvre, an act of aggressive driving, vehicle failure, falling asleep, and so on.

The combination of hazard and triggering event initiates an accident sequence, which will become an accident unless something can prevent it. An accident sequence, once started, can be stopped or mitigated by the actions of those
involved, crash barriers, seatbelts, air-bags, crumple zones, ABS, etc. or simply luck (eg. you fall asleep and drift across the road but awaken before meeting any oncoming traffic).

Road safety will be improved by removing/reducing hazards or preventing triggering events.

**Does 20mph remove hazards?**

- Speed limits encourage lawful drivers to drive at, or below, that speed
- So is a lawful driver exceeding a speed limit a hazard? If that were the case, then simply lowering a speed limit would immediately make vehicles “hazardous” that were previously not hazardous – that is obviously illogical, since the number on a sign has negligible bearing on the accident scenario
- Any moving vehicle is hazardous to some degree, and that hazard may vary with speed but, in terms of speed alone and within the scenarios we are considering, there is no threshold that would be recognised as intolerable.

**Conclusion:** 20mph does not remove hazards (or have any measurable positive effect on them).

**Does 20mph remove triggering events?** Simply NO.

In fact, it can introduce events, since pedestrians and cyclists can be lulled into a false sense of safety and can take less care when using the road. Slower speeds can also reduce driver concentration levels.

**Conclusion:** 20mph does not make roads safer – it actually makes them less safe.

**ECONOMIC BENEFIT of 20mph?**

It is often claimed that the value of a life is nearly £2 million and that that is the cost if someone is killed on the road. It is then further claimed that prevention of a deaths leads to a saving of £2m.

This is a specious and spurious argument. £2m is not the cost of a death on the road. Most of it is a value that a loved one might, hypothetically, be willing to pay to bring them back to life - it is therefore never spent. There are costs associated with the aftermath of a death on the road, but they amount to thousands, not millions. Actually, a serious injury needing lengthy hospital treatment can often cost more than a death.

A saving is a reduction in expected expenditure. By someone not being killed or injured, savings are in thousands of pounds.

Note that this is not to ignore or seek to diminish the anguish that undoubtedly arises as the result of the loss or, or serious injury to, a loved one, but to recognise that they are never actual costs, nor can they be considered as saving. It is misleading, and perhaps even inconsiderate, to try to assign arbitrary monetary values to such events.

This distinction between values and costs, and the need to avoid treating them as the same, was confirmed by the National Audit Office.[8]

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[8] Letter from Amyas Morse, NAO Comptroller to Eric Bridgstock, 14 Dec 2009
The fact that there is no evidence of 20mph reducing deaths or injuries further undermines the claims for it being an economic benefit.
20mph – URBAN AIR QUALITY

UK outdoor air quality has actually been steadily improving for over 40 years.

Emissions time-series figure reproduced below, with permission from a Local Transport Today article authored by Mr. P. Dobson (LTT726; 07-20/07/2017, p.20).

Legal limits for various vehicular/industrial emissions including nitrogen oxides + particulates (NO$_2$, NO$_x$ & PM$_{2.5}$/ PM$_{10}$) are being continually tightened.

The urban London average level is 14 µg/m$^3$. Of that 14µg/m$^3$, 7µg/m$^3$ (±c.2 µg/m$^3$ due to natural variability) is the global average background, exposure to which is unavoidable even in the Amazon rainforest[9].

If all vehicle traffic were removed from our roads, air pollution would fall by only 2µg/m$^3$.[10]

But aren’t 40,000 people a year dying because of poor urban air quality? Categorically NOT....

Sadiq Khan's figure on pollution deaths is a “zombie statistic and it's simply not true”, according to respiratory physician (& former government adviser), Professor Tony Frew.

[The 40,000 typical lifespans lost is a purely statistical construct to try to more alarmingly portray the estimated average 3 days of life lost by everyone in the UK - if air pollution were the only factor influencing life expectancy. But nowadays (courtesy of the essentially fossil-fuel driven economy) people are living years longer lifespans, not days shorter ones. Lifespan correlates much more strongly with wealth than air pollution levels]

10 Tony Frew (Professor of Respiratory Medicine, Royal Sussex Health, in discussion with journalist Andrew Neil on “Sunday Politics” 18th January, 2016: https://subsaga.com/bbc/news/sunday-politics/2016/12/18.html#transcript - Timeline 25m:34s to 39m:02s
“[Urban] Pollution levels are illegal because we made it illegal, not because it’s dangerous...” [11]

The latest COMEAP (Committee on the Medical Effects of Air Pollutants) research has been unable to substantiate any link between NOx & mortality. [12,13]

However, central and local government transport policies have for several decades been aimed at slowing urban traffic speeds towards a standstill[14]. This has negated 45 years of progress on vehicle emissions abatement; actually facilitating creation of urban vehicle emissions “hotspots”:

So will further slowing down urban traffic improve air quality?

![Emissions vs. vehicle speed schematic.](image)


It’s evident from the preceding graph (& the earlier TfL reference) that further reducing average urban traffic speeds can only serve to increase overall emissions; and to worsen existing air quality hotspots and, potentially create new ones.

**20mph – THE ECONOMY**

Speed limit reduction proposals never take account of the associated wasted productive time penalty. The recent 10kph limit reduction on French rural roads

[14] London average traffic speed was recently reported to be 11mph (roughly 18kph). See ... http://www.thisislocallondon.co.uk/news/804876.london_cars_move_no_faster_than_chickens
reduced average speed by 4.4kph, yielding no tangible casualty reduction improvement. It deflated the French rural economy by 3.8Bn€ per annum\textsuperscript{15}.

What will be the annual wasted productive time cost of lengthening the duration of every 30mph journey in Scotland?

\textsuperscript{15} https://www.thenewspaper.com/news/66/6628.asp