

# **ROAD TRAFFIC INJURIES ASSESSING THE GLOBAL HEALTH BURDEN AND CHARITIES WORKING IN THE AREA**



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# 1 SUMMARY

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Most people are probably unaware of the sheer scale of the devastation caused by road traffic injuries (RTIs). They kill 1.33 million people every year, making them the eighth biggest killer in the world: more than tuberculosis and more than the wars in Iraq and Afghanistan have killed in a decade. The death toll is likely to increase as quality road safety infrastructure fails to keep pace with expanding motorisation in low and middle income countries. Road deaths are projected to overtake HIV/AIDS as a global killer by 2030.

Some sources suggest that certain road safety interventions are highly cost-effective. For example, the Disease Control Priorities 2 (DCP2) report says that enforcement of speed limits can save a Disability-Adjusted Life Year (DALY) for less than \$10. If road safety charities could match this level of cost-effectiveness, then they would be more cost-effective than the charities we recommend at present. However, there are good reasons to be very cautious around these figures. Other academic studies by World Health Organisation (WHO) CHOICE and the John Hopkins International Injury Research Unit suggest that road safety charities may be much less cost-effective.

Most importantly, the data on cost-effective road safety interventions appears to be very limited at present. We should be very cautious around all current estimates and consequently be sceptical about the claim that road safety interventions are superior to our currently recommended charities.

There are relatively few charities working in the area and those that do are quite young. There are three charities which we suggest assessing again in a few years. The International Road Assessment Program (iRap) appears to provide very useful information for governments. However, they do not presently offer any cost-effectiveness estimates of their own work. Asia Injury Prevention (AIP) Foundation, which operates in Asia, and Amend, which operates in Africa, both appear to have a cost-effectiveness focus and themselves appear to be attempting to add to the body of knowledge on road safety. They would both certainly be worth returning to in a few years' time on completion of their cost-effectiveness assessments. However, at present we cannot recommend any existing road safety charities.

## 2 INTRODUCTION

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In this report, we have three aims. First, we try to give an up to date survey of the burden placed on global health by RTIs. Second, we examine the available interventions and give general estimates of their cost-effectiveness. Third, we assess the charities operating in the area to ascertain whether any of them ought to be amongst our recommended charities.

There are a number of reasons to believe that road safety is a *prima facie* potentially cost-effective area in which to donate. Firstly, as we shall see in section 1, the health burden of RTIs is enormous. Secondly, in spite of this, RTIs receive less publicity and funding than other comparably dangerous things such as HIV/AIDS and diabetes.<sup>1</sup> Thirdly, there are relatively few charities working on road safety, which increases the likelihood that their activities will have high impact. Fourth, a quick look at the evidence has some studies showing very high rates of cost-effectiveness. For example, a randomised control trial of placing posters in Kenyan long-distance buses – *matatus* – encouraging people to vocally criticise dangerous drivers saves a Disability Adjusted Life Year (DALY) for less than \$5.<sup>2</sup>

The International Road Assessment Programme (iRap) estimates that some government road safety countermeasures could avert a death or serious injury for as little as \$199.<sup>3</sup> These are extraordinarily low figures, lower than the charities recommended by Giving What We Can (around \$50 per DALY) and comparable even to childhood vaccination (<\$10 per DALY).



Source: <http://www.fiafoundation.org/>

<sup>1</sup> The attention we give to public health issues tends not to reflect the danger they pose to public health. Consider for example the claim in a 2004 paper that more Americans died as result of driving rather than flying after 9/11, than died on the four fatal flights. In spite of that, the latter issue has received a massive amount of publicity and the former has received almost none. Gerd Gigerenzer, "Dread Risk, September 11, and Fatal Traffic Accidents," *Psychological Science* 15, no. 4 (April 1, 2004): 286–87, doi:10.1111/j.0956-7976.2004.00668.x.

<sup>2</sup> James Habyarimana and William Jack, "Heckle and Chide: Results of a Randomized Road Safety Intervention in Kenya," *Journal of Public Economics*, Special Issue: International Seminar for Public Economics on Normative Tax Theory, 95, no. 11–12 (December 2011): 1438–46, doi:10.1016/j.jpubeco.2011.06.008.

<sup>3</sup> See 'India Four State Report' (2012) at [www.irap.net/en/about-irap-3/assessment-reports](http://www.irap.net/en/about-irap-3/assessment-reports)

Road safety might, then, have been neglected by the effective altruism movement.<sup>4</sup> However, although we ought to be optimistic about the current and future activities of some road safety charities, such as Amend and AIP Foundation, we cannot at this time recommend them ahead of our existing recommended charities, such as The Schistosomiasis Control Initiative and Project Healthy Children.

The current evidence for the effectiveness of road safety interventions in low and middle income countries appears not to be of particularly high quality and much of the data we do have suggests that road safety interventions are not as effective as our currently recommended charities. Nevertheless, it is worth keeping an eye on the area and returning to assess some of the charities again in one or two years, when cost-effectiveness assessments might be available.

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<sup>4</sup> However, see Givewell's overview at [www.givewell.org/labs/causes/traffic-safety](http://www.givewell.org/labs/causes/traffic-safety)

### 3 THE GLBOAL BURDEN OF ROAD TRAFFIC INJURIES

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Most of us have seen the aftermath of numerous road accidents and many of us will have been in one ourselves. But we are likely to underestimate the sheer scale of the global problem of road traffic injuries (RTIs). In 2010, according to the Global Burden of Disease Study, RTIs killed around 1.33 million worldwide<sup>5</sup> – more than 3,000 a day – making them the eighth biggest killer in the world, ahead of diseases like tuberculosis.<sup>6</sup>

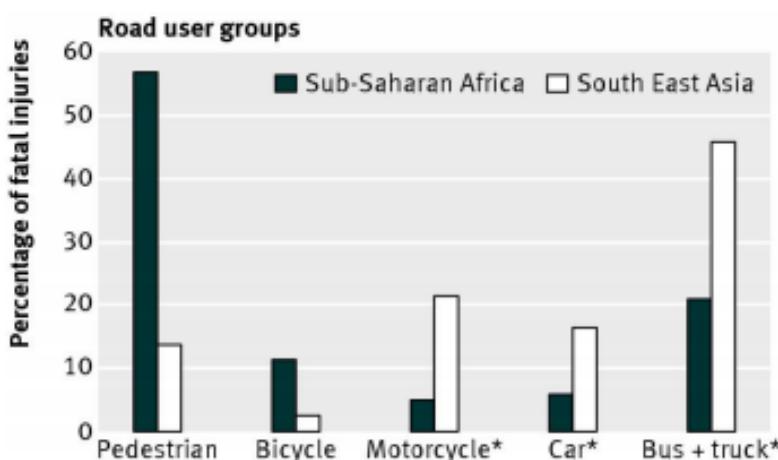
DISORDER	MEAN RANK (95% UI)
1 Ischaemic heart disease	1.1 (1 to 2)
2 Lower respiratory infections	1.9 (1 to 3)
3 Stroke	3.1 (3 to 4)
4 Diarrhoea	4.8 (4 to 7)
5 Malaria	5.5 (3 to 8)
6 HIV/AIDS	5.6 (4 to 7)
7 Preterm birth complications	6.3 (4 to 8)
8 Road injury	7.9 (5 to 9)
9 COPD	9.8 (9 to 12)
10 Neonatal encephalopathy*	10.8 (9 to 14)
11 Tuberculosis	11.2 (9 to 14)
12 Neonatal sepsis	11.3 (7 to 17)

<sup>5</sup> Rafael Lozano et al., “Global and Regional Mortality from 235 Causes of Death for 20 Age Groups in 1990 and 2010: A Systematic Analysis for the Global Burden of Disease Study 2010,” *The Lancet* 380, no. 9859 (December 2012): 2124, doi:10.1016/S0140-6736(12)61728-0. The WHO gives the lower figure of 1.24 million “WHO | Global Status Report on Road Safety 2013,” *WHO*, 4, accessed November 5, 2014, [www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2013/en/](http://www.who.int/violence_injury_prevention/road_safety_status/2013/en/). It should be said that the quality of the data is acknowledged to be very limited. Due to the workload placed on hospitals and police and the complexities of accurately collecting the information, many countries use systems which extrapolate results from a small geographical area to the whole country. Only 77 countries have sophisticated injury surveillance systems. “WHO | Global Status Report on Road Safety 2013,” 7.

<sup>6</sup> “WHO | Projections of Mortality and Causes of Death, <br>2015 and 2030,” *WHO*, accessed November 26, 2014, [www.who.int/healthinfo/global\\_burden\\_disease/projections/en/](http://www.who.int/healthinfo/global_burden_disease/projections/en/). The Global Burden of Disease project has them in eighth, Lozano et al., “Global and Regional Mortality from 235 Causes of Death for 20 Age Groups in 1990 and 2010,” 2113.

Global years of life lost ranks with 95% Uncertainty Intervals for the top 25 causes in 2010<sup>7</sup> Middle income countries are hardest hit, with 80% of road traffic deaths but only 52% of the world's registered vehicles.<sup>8</sup> High income countries have 47% of registered motorised vehicles but account for only 8% of road deaths.<sup>9</sup> In addition to the global deaths, between 20 and 50 million people are estimated to be disabled or injured each year.<sup>10</sup>

There are large disparities in death rates between different regions. The risk of dying as a result of an RTI is highest in the African Region (24.1 per 100 000 population), and lowest in the European Region (10.3 per 100 000).<sup>11</sup> This is in large part likely due to superior road design and improved safety in rich countries. Perhaps surprisingly, half of all road deaths are among pedestrians, cyclists and motorcyclists.<sup>12</sup>



Attribution of fatal road traffic injuries by road user group in sub-Saharan Africa and in South East Asia<sup>13</sup> The number of road deaths increased by around 400,000 from 1990 to 2010.<sup>14</sup> Pedestrian road deaths were responsible for nearly half of the increase in deaths over this period. However, road deaths plateaued between 2007 and 2013, despite a corresponding 15% increase in the number of registered vehicles. A major problem is that in some low and middle income countries, the growth in motorisation has been driven by the increased use of motorbikes, which are one of the least safe forms of transport.<sup>15</sup>

Looking to the future, as low and middle income countries develop and more people are able to afford motorised transport, the number of road deaths are likely to increase. The WHO projects that road deaths will overtake HIV/AIDS and diarrheal disease as a cause of death by 2030.<sup>16</sup>

<sup>7</sup> Lozano et al., "Global and Regional Mortality from 235 Causes of Death for 20 Age Groups in 1990 and 2010," 2115.

<sup>8</sup> "WHO | Global Status Report on Road Safety 2013," 4.

<sup>9</sup> Ibid., 5.

<sup>10</sup> M. Peden et al., "WHO | World Report on Road Traffic Injury Prevention," *WHO*, 2004, 33, [www.who.int/violence\\_injury\\_prevention/publications/road\\_traffic/world\\_report/en/](http://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/en/).

<sup>11</sup> "WHO | Global Status Report on Road Safety 2013," 5.

<sup>12</sup> Ibid., 6.

<sup>13</sup> D. Chisholm et al., "Cost Effectiveness of Strategies to Combat Road Traffic Injuries in Sub-Saharan Africa and South East Asia: Mathematical Modelling Study," *BMJ* 344, no. mar02 1 (March 2, 2012): 9, doi:10.1136/bmj.e612.

<sup>14</sup> Lozano et al., "Global and Regional Mortality from 235 Causes of Death for 20 Age Groups in 1990 and 2010," 2124.

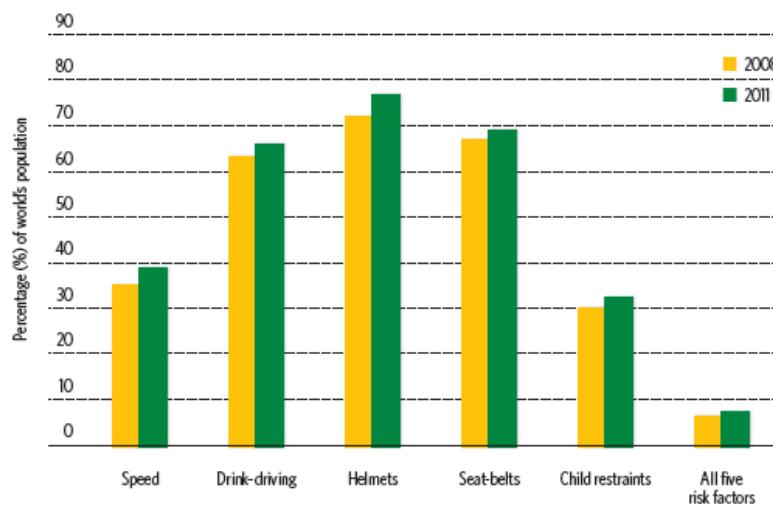
<sup>15</sup> Dean T. Jamison, World Bank, and Disease Control Priorities Project, *Disease Control Priorities in Developing Countries*, 2nd ed. (New York: Oxford University Press ; Washington, DC, 2006), 739.

<sup>16</sup> "WHO | Projections of Mortality and Causes of Death, 2015 and 2030." One great source of hope for RTI reduction (and for society in general) is the autonomous vehicle. See

[www.economist.com/news/business-and-finance/21618531-making-autonomous-vehicles-reality-coming-street-near-you](http://www.economist.com/news/business-and-finance/21618531-making-autonomous-vehicles-reality-coming-street-near-you) and [www.givewell.org/labs/causes/autonomous-vehicles](http://www.givewell.org/labs/causes/autonomous-vehicles).

The economic costs of RTIs are very high. Since the burden of RTIs falls disproportionately on those aged between 20 and 40,<sup>17</sup> RTIs cause a significant loss of economic productivity. In Kenya, for example, according to a 2003 study, more than 75% of road traffic casualties are among economically productive young adults.<sup>18</sup> Annual global economic costs of RTIs are estimated at \$518bn, though the WHO says this figure may be a considerable underestimate.<sup>19</sup> In many countries road safety efforts go underfunded. A 1996 study showed that road safety research and development received roughly 3% of what was spent on HIV/AIDS.<sup>20</sup>

As a consequence of the startling problem of RTIs, the UN General Assembly proclaimed a Decade of Action for Road Safety (2011-2020).<sup>21</sup> This was launched in 2011 in over 110 countries with the aim of improving the safety of roads, altering driver behaviour and improving emergency service response to road accidents. However, in 2011 less than 10% of the world population has comprehensive legislation on all five key risk factors for road safety: speed, drink-driving, helmets, seat belts and child restraints.<sup>22</sup>



Increase in the percentage of world population covered by comprehensive legislation on five key road safety risk factors 2008-2011<sup>23</sup>

There appears to be, then, significant room for improvement at the policy level. In sum, RTIs place an enormous, growing and neglected burden on world health.

<sup>17</sup> Peden et al., "WHO | World Report on Road Traffic Injury Prevention," 4.

<sup>18</sup> Ibid., 6.

<sup>19</sup> Ibid., 5.

<sup>20</sup> "WHO | Investing in Health Research and Development," WHO, chap. 5, accessed November 26, 2014, [www.who.int/tdr/publications/tdr-research-publications/investing-in-health/en/](http://www.who.int/tdr/publications/tdr-research-publications/investing-in-health/en/).

<sup>21</sup> "WHO | Global Plan for the Decade of Action for Road Safety 2011-2020," WHO, accessed November 26, 2014, [www.who.int/roadsafety/decade\\_of\\_action/plan/en/](http://www.who.int/roadsafety/decade_of_action/plan/en/).

<sup>22</sup> "WHO | Global Status Report on Road Safety 2013," 12.

<sup>23</sup> Ibid.

## 4 COST-EFFECTIVE INTERVENTIONS?

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Publications like DCP2, WHO CHOICE and The Copenhagen Consensus try to provide information for policymakers on which interventions produce the most human benefit for our buck.<sup>24</sup> These estimates can guide us towards general areas in which there is potential for high levels of cost-effectiveness. DCP2 and WHO CHOICE have examined a number of road safety interventions and shown them to be good value compared to many other public health interventions. Their estimates of road safety interventions differ quite radically, with the WHO CHOICE estimates at least ten times higher. Professor Adnan Hyder, Director of The International Injury Research Unit, John Hopkins (IIRU-JH), who was involved in both the DCP2 chapter and the WHO CHOICE paper, told us that this is chiefly because WHO CHOICE is concerned with the cost-effectiveness of bringing about legislative change and sustaining it for a ten year period.<sup>25</sup>

So, for WHO CHOICE the question was: what must be spent per DALY averted if there is no good legislation and no social momentum? In contrast, DCP2 asked: what must be spent per DALY averted if there is already good legislation and a supportive social environment?

The figures given by each publication are estimates of the cost-effectiveness of government-implemented interventions, not estimates of the cost-effectiveness of the marginal dollar donated to available charities, which is what Giving What We Can is fundamentally concerned with. So, even if the figures are in the range of Giving What We Can's most effective charities, much more work needs to be done to show that this proves that we ought to donate to any actual road safety charities today. We discuss that issue in section 3.

### Interventions assessed by both DCP2 and WHO CHOICE

WHO CHOICE has looked at 5 different road safety interventions and published an analysis of their cost-effectiveness in Sub-Saharan Africa and South East Asia in the British Medical Journal.<sup>26</sup> Both DCP2 and WHO CHOICE examined the following three road safety interventions:<sup>27</sup>

Enforcement of speed limits and other effective road safety regulations WHO CHOICE and DCP2 look at slightly different forms of traffic enforcement. On the basis of a meta-analysis,<sup>28</sup> WHO CHOICE estimates that enforcement of speed limits via mobile speed cameras averts a DALY for \$1589 in South East Asia and for \$1668 in Sub-Saharan Africa.<sup>29</sup> DCP2 investigates an intervention involving legislation for stiffer penalties, media

<sup>24</sup> See [www.who.int/choice/en/](http://www.who.int/choice/en/), [www.dcp-3.org/dcp2](http://www.dcp-3.org/dcp2) and [www.copenhagenconsensus.com](http://www.copenhagenconsensus.com).

<sup>25</sup> Personal email correspondence, 12<sup>th</sup> October 2014.

<sup>26</sup> Chisholm et al., "Cost Effectiveness of Strategies to Combat Road Traffic Injuries in Sub-Saharan Africa and South East Asia." A pdf of the paper is available unrestricted at [www.who.int/choice/publications/road.pdf](http://www.who.int/choice/publications/road.pdf). A more detailed working paper version is available at [www.who.int/choice/publications/d\\_2009\\_road\\_traffic.pdf](http://www.who.int/choice/publications/d_2009_road_traffic.pdf).

<sup>27</sup> The figures given all use a 3% discount rate.

<sup>28</sup> Rune Elvik and Truls Vaa, *The Handbook of Road Safety Measures* (Amsterdam ; London: Elsevier, 2004).

<sup>29</sup> Chisholm et al., "Cost Effectiveness of Strategies to Combat Road Traffic Injuries in Sub-Saharan Africa and South East Asia," 8. All future estimates mentioned are in the table on this page.

coverage of the new regime, and better enforcement. On the basis of a study in Brazil,<sup>30</sup> they estimate that this intervention could avert a DALY for less than \$10 in South and East Asia and for \$12 in Sub-Saharan Africa.<sup>31</sup>

## Bicycle helmet legislation and enforcement

Bicyclists face a considerable risk of injury if involved in a road crash. Head and face injuries represent a large proportion of the total injuries incurred.<sup>32</sup> WHO CHOICE estimates that helmet legislation averts a DALY for \$3678 in South East Asia and for \$1233 in Sub-Saharan Africa. DCP2 argues that the cost-effectiveness of increasing helmet usage to 100% in China would be \$107 per DALY.



Source: <http://www.fiafoundation.org/our-work/road-safety>

<sup>30</sup> Luiz F. Poli de Figueiredo et al., “Increases in Fines and Driver Licence Withdrawal Have Effectively Reduced Immediate Deaths from Trauma on Brazilian Roads: First-Year Report on the New Traffic Code,” *Injury* 32, no. 2 (March 2001): 91–94, doi:10.1016/S0020-1383(00)00172-8.

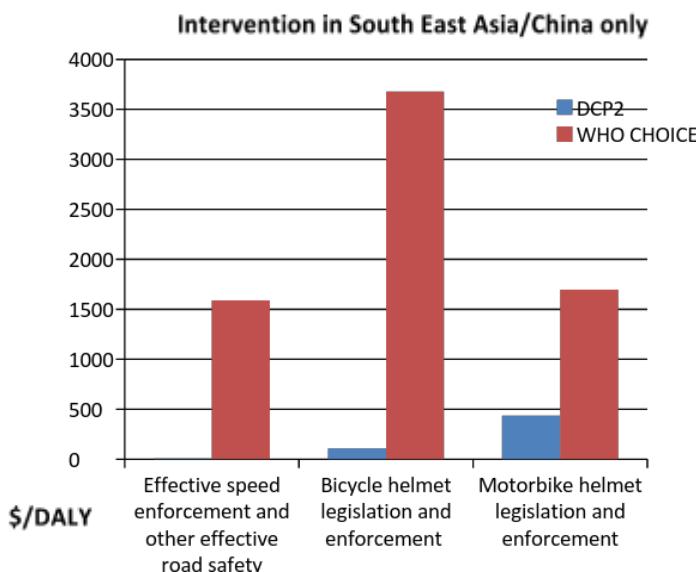
<sup>31</sup> Jamison, World Bank, and Disease Control Priorities Project, *Disease Control Priorities in Developing Countries*, 745–748. All future DCP2 estimates are from these pages.

<sup>32</sup> [www.who.int/choice/publications/d\\_2009\\_road\\_traffic.pdf](http://www.who.int/choice/publications/d_2009_road_traffic.pdf) page 23

## Motorcycle helmets legislation and enforcement

Motorcyclists have a greatly elevated risk of RTI, particularly head injuries. Motorcycle helmets provide a great amount of protection against head injuries.<sup>33</sup> WHO CHOICE estimates that mandating helmet use averts a DALY for \$1696 in South East Asia and for \$6683 in Sub-Saharan Africa. DCP2 suggests that helmet legislation in China specifically could avert a DALY for \$437.

The chart below summarises the difference:



## Interventions only assessed in one source

The following interventions were covered in only one of the sources.

- **Speed bumps**

DCP2 references a study of speed bumps in Ghana, which purported to show that they reduced injuries by 50%. Using this figure, DCP2 estimates that this intervention averts a DALY for less than \$5 in all regions.

- **Drink driving legislation and enforcement**

WHO CHOICE estimates that drink driving legislation and enforcement through breath testing averts a DALY for around \$2236 in Sub-Saharan Africa and for \$2731 in South East Asia.

- **Seat belt legislation and enforcement**

According to a meta-analysis, the average effect of mandatory seatbelt legislation in light vehicles is a reduction in fatalities of 11% and an 18% reduction in serious injuries.<sup>34</sup> WHO CHOICE estimates that seatbelt legislation and enforcement would avert a DALY for \$4579 in Sub-Saharan Africa and for \$2502 in South East Asia.

<sup>33</sup> [www.who.int/choice/publications/d\\_2009\\_road\\_traffic.pdf](http://www.who.int/choice/publications/d_2009_road_traffic.pdf) page 22.

<sup>34</sup> Elvik and Vaa, *The Handbook of Road Safety Measures*.

## Which estimate is most helpful for our purposes?

The DCP2 estimates are extremely low. They suggest that road safety interventions are amongst the most cost-effective actions available to governments. If this cost-effectiveness can be matched by any charities, that would make them serious contenders to be amongst our recommended charities. Even on the much higher WHO CHOICE estimates, the interventions will be deemed very cost-effective according to UN guidelines<sup>35</sup> because they avert a DALY for less than GDP per capita in many countries.

Which estimate should guide us for assessing charities? There are a number of factors to consider. Firstly, it is not immediately clear which of the questions by DCP2 and WHO CHOICE is more relevant for our purposes here. Governments rather than road safety charities would bear most of the costs of sustaining the interventions over time a ten year period, so the WHO CHOICE figures might not be directly applicable to our assessment of charity cost-effectiveness. On the other hand, some of the areas in which the most promising road safety charities operate – South East Asia and Africa – to a large extent lack a supportive regulative and social framework. For this reason, the DCP2 figures could well be more relevant.

Though there is currently a great deal of uncertainty, we suspect that the cost-effectiveness of road safety charities will be somewhere between the DCP2 and WHO CHOICE estimates. A cost-effectiveness study of a programme instituted by the road safety charity Bloomberg Philanthropies (which we return to in section 3) may be instructive. To reverse global deaths and injuries from road traffic crashes, the Bloomberg Global Road Safety Program committed \$125 million over five years (2010–2014) to the Road Safety in 10 countries project (RS-10) to support road safety interventions in ten low- and middle-income countries, which account for around half of all road deaths globally: Brazil, Cambodia, China, India, Kenya, Mexico, Russian Federation, Turkey, Egypt and Viet Nam.<sup>36</sup> This program engaged in advocacy for many of the measures discussed here, such as speed enforcement, drink driving enforcement and helmet enforcement.

Admirably, Bloomberg Philanthropies is assessed by the Johns Hopkins International Injury Research Unit. In a 2012 paper in *Traffic Injury Prevention*, Esperato et al. projected the number of lives RS-10 would save.<sup>37</sup> That study involved a large literature review of road safety information which, after filtering out studies not focused on effectiveness and other inappropriate studies, used 13 articles to ascertain effectiveness estimates. They conclude that for \$125m, RS-10 is projected to save 10,310 lives. This entails that RS-10 saves a life for \$12,124, which suggests it saves a year of life for \$303.<sup>38</sup> This makes RS-10 a very good investment. However, the cost-effectiveness is significantly higher than Giving What We Can's recommended charities, which avert a DALY for around \$40.

This figure is a projection, not a survey of actual results, so we should be cautious about it, but it may give a more accurate picture of the cost-effectiveness of road safety interventions in countries which road safety charities are likely to operate in, i.e. countries which have legislative and social deficiencies in the area of road safety, but which do not completely lack a supportive legislative and social environment.

<sup>35</sup> [www.who.int/choice/costs/CER\\_thresholds/en/](http://www.who.int/choice/costs/CER_thresholds/en/).

<sup>36</sup> [mikebloomberg.com/Bloomberg\\_Philanthropies\\_Leading\\_the\\_Worldwide\\_Movement\\_to\\_Improve\\_Road\\_Safety.pdf](http://mikebloomberg.com/Bloomberg_Philanthropies_Leading_the_Worldwide_Movement_to_Improve_Road_Safety.pdf)

<sup>37</sup> Alexo Esperato, David Bishai, and Adnan A. Hyder, "Projecting the Health and Economic Impact of Road Safety Initiatives: A Case Study of a Multi-Country Project," *Traffic Injury Prevention* 13, no. sup1 (2012): 82–89.

<sup>38</sup> This is on the assumption that a death is equal to 40 years of life lost.



Source: [www.bloomberg.org/content/uploads/sites/2/2014/04/Bloomberg\\_Road\\_Safety\\_Midway\\_Report\\_Final.pdf](http://www.bloomberg.org/content/uploads/sites/2/2014/04/Bloomberg_Road_Safety_Midway_Report_Final.pdf)

All of this said, the most important thing to note here is that the existing data appears to be very limited. Esperato et al express worries about the quality of data on effectiveness in low and middle income countries. The articles they used exhibit four main weaknesses:

“These are (1) not focusing on a specific intervention, (2) not having specific baseline data, (3) not having a control group (i.e., counterfactual), and (4) not adjusting for potential confounders.”<sup>39</sup>

For example, only two of the effectiveness studies they found accounted for the counterfactual by having a control, and only one study accounted for potential confounders. Given that Esperato et al engaged in such a wide-ranging literature review, this should make us have serious doubts about the robustness of any existing cost-effectiveness estimates of road safety interventions. Similarly, WHO CHOICE notes that effectiveness data for many interventions from low and middle income countries are lacking and so they are forced to infer conclusions from data in high income countries.<sup>40</sup>

The DCP2 figures also seem to be problematic. For example, it gets data on the effectiveness of speeding regulation from one Brazilian study which does not account for the counterfactual. They then infer cost-effectiveness estimates for all regions of the world.<sup>41</sup> This is not to say that DCP2 or WHO CHOICE are in any way at fault: they can only work with the best evidence available.

In sum, we do not yet have reason to completely rule out road safety interventions, but we should be suspicious about claims that they could rival our currently recommended charities. Moreover, the available evidence on cost-effectiveness is very limited at present. Unless a road safety charity presents strong evidence showing the high cost-effectiveness of their activities, we ought not to recommend them.

<sup>39</sup> Esperato, Bishai, and Hyder, “Projecting the Health and Economic Impact of Road Safety Initiatives,” 87.

<sup>40</sup> [www.who.int/choice/publications/d\\_2009\\_road\\_traffic.pdf](http://www.who.int/choice/publications/d_2009_road_traffic.pdf) pp.20-25.

<sup>41</sup> Jamison, World Bank, and Disease Control Priorities Project, *Disease Control Priorities in Developing Countries*, 745–746. A similar point can be made about all the interventions DCP2 considers.

## 5 ASSESSING ROAD SAFETY CHARITIES

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There are relatively few road safety charities and of the major ones than exist, many of them are quite young. For this report, we have evaluated the cost-effectiveness of 10 road safety charities around the world. We ruled out five of them for some or all of the following reasons: they appear not to accept individual donations; they lack cost-effectiveness information and did not respond to our queries about cost-effectiveness; the approaches they pursue are *prima facie* unlikely to be cost-effective; and they do not accept earmarked donations for programmes which may be cost-effective.<sup>42</sup>

The other five are either big players who do not accept donations, or charities which show promise but do not at present have cost-effectiveness information.

### The leading road safety charities

The two leading road safety charities in the world are the FIA Foundation and Bloomberg Philanthropies. They both do important work and often fund the other charities we discuss here. However, neither accepts private donations.

#### **The Fédération Internationale de l'Automobile (FIA) Foundation - [www.fiafoundation.org](http://www.fiafoundation.org)**

The FIA Foundation first proposed the UN Decade of Action for Road Safety 2011-2020, devised and coordinates the Global Fuel Economy Initiative, and has provided the core grant for both the International Road Assessment Programme (discussed below) and the Global New Car Assessment Programme (NCAP). It also provides grants to many of the other charities mentioned here. The FIA Foundation undoubtedly does very important work, but it has an endowment and so does not need to fundraise.

#### **Bloomberg Philanthropies - [www.bloomberg.org](http://www.bloomberg.org)**

Michael Bloomberg, founder of a multi-billion dollar global data and media company and former Mayor of New York City, is the driving force behind Bloomberg Philanthropies. The charity focuses on public health, environment, education, government innovation, and arts & culture, as they believe these areas to be those in which they can do the most good. However, they also do not accept individual donations.

#### *Worth assessing again in a few years' time*

While we cannot recommend them at present, iRap, Amend and AIP Foundation are worth assessing again in a few years' time. iRap appears to do very useful work and so may be worth re-examining later. Amend and AIP Foundation are certainly worth returning to. Both show a commitment to cost-effectiveness assessments, which, they suggested in personal correspondence, will be available in one or two years' time.

#### **The International Road Assessment Program (iRap) - [www.irap.net/en](http://www.irap.net/en)**

iRap is a member of the United Nations Road Safety Collaboration. It provides tools and training to help automobile associations, governments, funding agencies, research institutes and other non-government

<sup>42</sup> These included Association for Safe International Road Travel (ASIRT), The Institute for Road Traffic Education (IRTE), Eastern Alliance for Safe and Sustainable Transport (EASST), Fundación Gonzalo Rodríguez (FGR), and EMBARQ.

organisations in more than 70 countries make roads safe. Their activities include inspecting high-risk roads and developing star ratings, safer roads investment plans and risk maps. They also track road safety performance so that funding agencies can assess the benefits of their investments.

iRap has numerous cost-effectiveness analyses of prospective road infrastructure projects across the world.<sup>43</sup> As we noted above, they suggest that some projects can avert a death or serious injury for less than \$200. However, these are cost-effectiveness assessments of government projects, not of donating to iRap itself. So far as we know, they have yet to perform a cost-effectiveness assessment of their own work and they did not respond to our queries about their own cost-effectiveness. It is also unclear at present whether they require further funds. Nonetheless, their work appears to be *prima facie* very useful and potentially high impact.

If their advocacy could, for example, direct government funds to projects which avert a death or serious injury for less than \$200, this would make iRap very cost-effective. It would be worth enquiring again in a one or two years to see if they have performed any cost-effectiveness analyses of their own work.

#### **Asia Injury Prevention (AIP) Foundation - [www.asainjury.org](http://www.asainjury.org)**

The AIP Foundation's mission is to provide traffic knowledge and skills to countries in Asia with the aim of reducing RTIs. The AIP Foundation has a five pillar approach: programmes targeted at vulnerable road users; public awareness education; legislative advocacy; helmet production; and research monitoring and evaluation of their efforts.

AIP Foundation has various impressive achievements so far. In 2007, they combined legislative advocacy and public awareness education to successfully push for mandatory motorbike helmet laws in Vietnam. This undoubtedly saved many lives. Nellie Moore, their Junior Monitoring & Evaluation Manager, told us that, by their own estimates, as a result of the programme, \$2.6bn was saved, 412,200 road injuries were avoided and 20,600 fatalities were prevented in Vietnam.<sup>44</sup> These figures were calculated using Asian Development Bank accident costing standards and data on injuries and fatalities reported by the Vietnamese government and by the World Health Organization.

Ms Moore also told us that they were currently making cost-effectiveness projections to spur policy action in Cambodia mandating and encouraging motorbike helmet use. They project that if their efforts succeed in bringing about a mandatory helmet law in Cambodia 2015, then 561 deaths would be prevented by 2020.



Source: <http://asainjury.org/our-work/targeted-programs/helmet-safety/>

If the given estimates of lives saved in Vietnam are accurate, then AIP Foundation is potentially very cost-effective. AIP Foundation spent nearly \$2.5m in 2013. If we assume it spent \$2m every ten years with the

<sup>43</sup> [www.irap.net/en/about-irap-3/assessment-reports](http://www.irap.net/en/about-irap-3/assessment-reports)

<sup>44</sup> Personal email correspondence 16<sup>th</sup> October 2014.

sole consequence of a mandatory helmet law in Vietnam which saved 20,600 lives, then their activities would have saved a life for \$970. This is around half the cost offered by our recommended charities.

AIP Foundation appears to be quite serious about assessing their programmes. Its staff has produced a number of academic publications on issues which would be helpful for an overall cost-effectiveness assessment of their activities.<sup>45</sup> Ms Moore also told us that they are currently seeking to standardise their cost-effectiveness estimates.

This suggests that AIP Foundation is worthy of consideration. However, there are a number of caveats. Firstly, there has not yet been a rigorous, external and independent analysis of their cost-effectiveness. Ms Moore told me that they are currently in the process of assessing their cost-effectiveness in partnership with various other NGOs.<sup>46</sup> If this is published in a peer-reviewed journal or verified by the WHO, then we can increase our credence in claims about its cost-effectiveness. At present, however, these things are lacking. Secondly, it is not clear whether the helmet legislation would have happened anyway without the efforts of AIP Foundation. Thirdly, Vietnam might have been a particularly good opportunity for motorbike helmet intervention. It might be that campaigns in other countries do not promise such large benefits. Indeed, the figures given for Cambodia may well suggest this. If we assume again that it would cost \$20m to effect a helmet law and increased helmet usage and that 561 lives would be saved, then the programme saves a life for \$35,650. There is, then, reason to be very cautious around claims about the cost-effectiveness of AIP Foundation, but nevertheless to be optimistic about the good it does. We recommend returning to this charity in one or two years to look at the outcomes of its cost-effectiveness assessments.

**Amend - [www.amend.org](http://www.amend.org/)**



Source: <http://www.amend.org/>

Amend is a charity which aims to decrease the burden of RTIs in Africa. It aims to develop, implement, and evaluate evidenced-based interventions to reduce the incidence of RTIs among the most vulnerable road users in Africa today. According to Amend's website, the WHO has said that "the interventions promoted by Amend are perfectly in line" with those being promoted by the WHO. Amend is a member of the United Nations Road Safety Collaboration.

Amend's Director Jeffrey Witte provided helpful information when asked about cost-effectiveness.<sup>47</sup> Overall, the message was that at the moment we simply do not know enough to reach a verdict about the cost-effectiveness of interventions in the developing world. Amend has various population-based surveys, some of them published in peer-reviewed journals, of the exact nature of RTIs in Africa. None as yet deal directly with the cost-effectiveness of their interventions. However, in January, Amend is to embark on a two

<sup>45</sup> [www.asiainjury.org/our-work/research-monitoring-evaluation/](http://www.asiainjury.org/our-work/research-monitoring-evaluation/)

<sup>46</sup> Specifically, they are working on two papers. One assesses cost-savings in both Vietnam and Cambodia, as a result of their campaign against motorcycle programme. The other is a cost-effectiveness assessment of an on-going project in Cambodia. Personal email correspondence 4<sup>th</sup> December 2014.

<sup>47</sup> Personal email correspondence 13<sup>th</sup> October 2014.

year project funded by the FIA Foundation to perform a rigorous evaluation of the impact of their infrastructure programme on injury rates. Mr Witte confirmed pessimism about the quality of the data by saying that there are very few or zero papers which prove to a standard publishable in a peer-reviewed journal that any intervention has reduced RTIs in Africa (or anywhere else in the developing world). Amend claim to wish to change this.<sup>48</sup>

At present, Amend cannot provide a robust \$/DALY estimate, but it would be worth returning to assess them in two or so years once their assessment is completed. Their scientific focus is certainly to be commended.

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<sup>48</sup> [www.amend.org/our-work/](http://www.amend.org/our-work/)

## 6 CONCLUSION

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It is important to be reminded of the scale of the devastation caused by RTIs. Every year, many more people die in RTIs than have been killed over a decade in the wars in Iraq and Afghanistan.<sup>49</sup> The death toll on our roads is likely to continue rising to make RTIs more deadly than HIV/AIDS by 2030.

The evidence on the cost-effectiveness of interventions to reduce the burden of RTI is somewhat equivocal. DCP2 and WHO CHOICE answer different questions and so give very different estimates. It seems likely that the figure relevant for recommending a charity is somewhere in between the two estimates: above \$10 but below \$1000. Research suggests that the implementation of UN recommended road safety measures in middle-income countries (which are hardest hit by RTIs) saves a year of life for around \$303, which is around five or six times the figure offered by our recommended charities. However, the available data for low and middle income countries appears to be very limited.

Two charities in particular, AIP Foundation and Amend, appear to have a cost-effectiveness focus and will have completed cost-effectiveness assessments of their work in a few years time. It is likely to be worth returning to check on their progress then. At present, however, we cannot recommend any road safety charities.

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<sup>49</sup> [costsofwar.org/article/civilians-killed-and-wounded](http://costsofwar.org/article/civilians-killed-and-wounded)

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