

Cycling and road safety: Overview

THIS BRIEFING COVERS:

Risks and benefits of cycling; tackling deterrents; cycle training; targets and indicators; cycle safety awareness campaigns.

HEADLINE MESSAGES

- Cycling is essentially a safe activity, causing little risk either to cyclists themselves or to other road users. Moreover, there is good evidence that cyclists gain from 'safety in numbers', with cycling becoming safer as cycle use increases.
- However, fear of road traffic is a major deterrent, despite the health, environmental and other benefits of cycling.
- Actual cycle safety in the UK lags behind many of our continental neighbours, because of poorly designed roads and junctions, traffic volumes and speeds, irresponsible driving, and a legal system that fails to respond adequately to road danger.
- National and local government should therefore aim for *more* as well as *safer* cycling. These two aims can and should go hand-in-hand.

KEY FACTS

- The life years gained due to the health and fitness benefits of cycling in Britain outweigh the life-years lost through injuries by a factor of around 20:1.
- From 2012-2016, one cyclist was killed on Britain's roads for every 30 million miles travelled by cycle - the equivalent to well over 1,000 times around the world.
- Figures for the last three years suggest that, per billion miles travelled, pedestrians were more likely than cyclists to be killed.
- However, around 59% of non-cyclists in Britain feel that it is too dangerous for them to cycle on the roads.
- Overall, the UK has a good road safety record - but for cycle safety in particular, it is one of the poorer performing countries in Europe.
- From 2006, for every one billion miles cycled, the number of cyclists killed or seriously injured (KSI) increased at least until 2012 (in 2006, there were 868 cyclist KSI per billion miles, and 1,070 in 2012). Most of the following years witnessed a drop, but the 2016 figure (1,011 KSI per billion miles) is still higher than that for 2006. In contrast, the KSI rates for people in motor vehicles were all higher in 2006 than they were ten years on.





Cycling UK VIEW

- Road safety strategies, nationally and locally, should recognise that:
 - Cycling is a safe activity, posing little risk either to cyclists themselves or to other road users;
 - The health benefits of cycling far outweigh the risks involved;
 - Combined with good provision, cycling gets safer the more cyclists there are: the 'safety in numbers' effect;
 - The aim of cycle safety policies and initiatives should be to encourage more as well as safer cycling, in order to maximise its health, environmental and other benefits, and to improve overall safety for all road users.
- Encouraging more as well as safer cycling involves tackling factors that deter cycle use. These include high traffic volumes and speeds; irresponsible driver behaviour; the unfriendly design of many roads and junctions; and lorries.
- The provision of cycle training to the national standard can also help people to cycle more, to ride more safely, and to feel safer and more confident while doing so. It can also help parents feel more confident about allowing their children to cycle.
- Increases in cyclist casualties may still mean cycle safety is improving if cycle use is increasing more steeply than cyclist casualties. Therefore, targets and indicators for the effectiveness of road safety strategies should adopt 'rate-based' measures for improvements in cycle safety, e.g. cycle casualties (or fatal and serious injuries) per million miles cycled, or per million trips. Simple casualty reduction targets should be avoided.
- 'Perception-based' indicators, which show whether public perceptions of cycle safety in a given area are getting better, can be used alongside 'rate-based' indicators, or as an interim substitute for the latter if necessary.
- Care should be taken to avoid cycle safety awareness campaigns that 'dangerise' cycling. These deter people from cycling or allowing their children to cycle, and are counter-productive because they erode the 'safety in numbers' effect, as well as undermining the wider health and other benefits.

BACKGROUND INFORMATION

1. Road safety strategies and cycling: key elements

Cycling UK view: Road safety strategies, nationally and locally, should recognise that:

- Cycling is a safe activity, posing little risk either to cyclists themselves or to other road users;
- The health benefits of cycling far outweigh the risks involved;
- Combined with good provision, cycling gets safer the more cyclists there are: the 'safety in numbers' effect;
- The aim of cycle safety policies and initiatives should be to encourage more as well as safer cycling, in order to maximise its health, environmental and other benefits, and to improve overall safety for all road users.

Despite the UK's good overall record on road safety in terms of deaths per billion vehicle-km and per million inhabitants when compared with other EU countries, the European Transport Safety Council (ETSC) has identified the UK and the Netherlands as the EU countries with the slowest progress since 2010.¹ As far as cyclist fatalities are concerned, ETSC reports that the UK is also lagging behind, saying that from 2003-2013, out of 26 EU countries it studied: "progress was slowest in the United Kingdom, Slovenia, Austria, Romania and Norway."²

- From 2012 to 2016 (GB), about 1.7% of all trip stages by private transport were made by cycle, but cyclists represented over 6.2% of reported road fatalities and about 14.4% of serious injuries.^{3,4}
- With regard to cyclist fatalities, in statistical terms little has changed over the last few years. The 102 cyclists killed in 2016 is very similar to the level seen since 2008.⁵
- From 2006, for every one billion miles cycled, the number of cyclists killed or seriously injured (KSI) increased at least until 2012 (in 2006, there were 868 cyclist KSI per billion miles, and 1,070 in 2012). Most of the following years witnessed a drop, but the 2016 figure (1,011 KSI per billion miles) is still higher than that for 2006. In contrast, the KSI rates for people in motor vehicles were all higher in 2006 than they were ten years on.⁶
- In 2016, around 59% of non-cyclists in Britain felt that it was too dangerous to cycle on the roads.⁷

a. Risk to other road users

Compared to motor vehicles, cyclists put others at negligible risk. Cycling is not responsible for emissions that lead to and exacerbate respiratory disease, and cyclists cause very few injuries to other road users. In Great Britain:

- From 2007 to 2016 (GB), the vast majority – 98.6% - of pedestrians killed or seriously injured (KSI) in collision with a vehicle were hit by a motor vehicle.⁸
- In 2016, out of the 14,668 collisions involving a car and cycle, no car occupant died. Fifty cyclists were killed, however.⁹

For more on the low risks presented by cyclists, see:
www.cyclinguk.org/campaigning/views-and-briefings/cyclists-behaviour-and-law

b. Risks v health benefits of cycling

Some people are concerned that the effect of promoting cycling puts people in danger because they believe that cycling is a high-risk pursuit. However:

- **Cycling isn't a particularly high-risk activity:** on average, over 2012-16:
 - One cyclist was killed on Britain's roads for every 30 million miles travelled by cycle - the equivalent to well over 1,000 times around the world;¹⁰
 - There were around 9.4 million cycle trips for every cyclist death;¹¹
 - The general risk of injury of any severity whilst cycling was just 0.05 per 1,000 hours of cycling.¹²

Figures for the last three years suggest that, per billion miles travelled, pedestrians were more likely than cyclists to be killed.¹³

- **The benefits of cycling far outweigh the risks:**

A good deal of research has been carried out on cycling and health and all of it confirms that the activity is much more likely to be beneficial than harmful. Mayer Hillman's estimate from 1992, perhaps the most frequently quoted figure, suggested that the life years gained due to the health and fitness benefits of cycling in Britain outweighed the life-years lost through injuries by a factor of around 20:1.¹⁴

More recent studies which have, like Hillman's, omitted the effects of pollution, suggest that the health benefits outweigh the injury risks by between 13:1 and 415:1. Researchers who have accounted for pollution suggest that cyclists are probably less exposed than drivers and, in any case, the health benefits of cycling significantly outweigh the pollution disbenefit.

For more on cycling and health, and on air pollution, see our briefings at:
www.cyclinguk.org/campaigning/views-and-briefings/air-quality



c. The 'safety in numbers' effect

A growing body of evidence suggests that cyclists gain from 'safety in numbers' i.e. as cycle use increases, the risk per mile cycled goes down.¹⁵

The causal mechanism for this has not been established, but it is likely that drivers grow more 'cycle aware' when there are more cyclists on the road. It may also be that increased cycle use means that a greater proportion of the driving population are also cycle users, with a better understanding of how to drive around cyclists safely – a phenomenon established by research.¹⁶ Also, the effect is even stronger where conditions for cycling have improved, and/or traffic speeds reduced.

- The relative risk of cyclists having a serious incident in Copenhagen has reduced by 23% since 2006, matched by an increase in kilometres travelled of 22% on an average weekday (1.4 million km). Cyclists' feeling of safety has also increased by 43%.¹⁷
- As mentioned in section 1, the last few years have largely seen a decrease in the number of cyclists KSI per billion miles in Britain. This has been accompanied by an increase in cycling – the 3.5 billion vehicle miles cycled in 2016 represents a 23% increase on the estimated figure ten years before.¹⁸

For more on 'safety in numbers', see: www.cyclinguk.org/campaign/safety-in-numbers
And *Safety in Numbers for Cyclists in England: Measuring the Effect* (RSA, 2016)
<http://roadsafetyanalysis.org/2016/11/cycling-safety-in-numbers-research/>

2. Tackling the deterrents

Cycling UK view: Encouraging more as well as safer cycling involves tackling factors that deter cycle use. These include high traffic volumes and speeds; irresponsible driver behaviour; the unfriendly design of many roads and junctions; and lorries.

a. High traffic volumes and speeds

High volumes of motor traffic, coupled with drivers going too fast, is a major barrier to promoting cycling on British roads. This can be tackled by introducing properly enforced lower speed limits, especially 20 mph for residential and community streets. This contributes to a safer and more attractive environment for everyone, including cyclists.

b. Irresponsible driver behaviour

Educating drivers about the needs of cyclists, and penalising offenders effectively would help create a safer and more attractive environment for cycling and walking. In particular, the drink/drive limit should be lowered and hands-free mobile phones banned.

Also, better resourced traffic police and more of them, well-designed incident reporting systems and the commitment to investigate all collisions thoroughly (particularly those involving non-motorised users), would help address substandard driving. The Health and Safety Executive and other enforcement agencies with road safety responsibilities should prioritise these more highly, and be given the resources they need to do so.

For more on common driving offences, see:
www.cyclinguk.org/campaigning/views-and-briefings/common-driving-offences
For more on traffic policing, see:
www.cyclinguk.org/campaigning/views-and-briefings/traffic-police-and-other-enforcement-agencies

c. Unfriendly road design

People are put off cycling by poor road and junction layouts that cater primarily for motor traffic and ignore cyclists' needs. Badly thought out cycle 'facilities' and inconsistencies in quality only compound this. Cycling UK therefore believes that the DfT needs to produce nationally defined standards on high-quality cycle-friendly planning and design, based on exemplary guidance already produced e.g. Transport for London's *Cycling Design Standards*¹⁹ and the Welsh Government's standards drawn up in conjunction with the *Active Travel (Wales) Act*.²⁰ Both of these publications offer useful guidance that planners and engineers should be encouraged to follow in the meantime.

For more on cycle-friendly design and planning, see:

www.cyclinguk.org/campaigning/views-and-briefings/cycle-friendly-design-and-planning-overview

d. Lorries

Despite accounting for just 3.6% of non-motorway motor traffic mileage on British roads, from 2012-16, heavy goods vehicles (HGVs) were involved in around 17.5% of cyclists' fatalities.²¹

Cyclists' collisions with HGVs are far more likely to prove fatal than those involving cars: the cyclist is killed in about a fifth of serious injury cyclist/HGV collisions. This figure is around 2% for cyclists/cars. Equally, HGVs are involved in only about 1.4% of slight injuries to cyclists but, as mentioned, 17.5% of cyclists' fatalities.²²

Ways to tackle the problem include: maintaining and enforcing safe driving and vehicle standards; training and information for *both* cyclists and goods vehicle drivers; cycle-friendly vehicles; and road layout, routing and distribution strategies that minimise conflict.

For more on lorries, see:

www.cyclinguk.org/campaigning/views-and-briefings/goods-vehicles-lorries-hgvs-vans-etc

3. Cycle training

Cycling UK view: The provision of cycle training to the national standard can also help people to cycle more, to ride more safely, and to feel safer and more confident while doing so. It can also help parents feel more confident about allowing their children to cycle.

Unlike its predecessor 'Cycle Proficiency', the national standard cycle training progresses through three levels. Often branded as 'Bikeability', it starts by teaching basic control skills (typically learnt in the playground), then advances until learners have the confidence and ability to handle busy traffic and major junctions. It is therefore important to offer cycle training not just for children but also for teenagers as they gain independence and start making longer journeys. It is equally beneficial for adults wishing to rediscover cycling. www.bikeability.org.uk





4. Targets and indicators

Cycling UK view:

- Increases in cyclist casualties may still mean cycle safety is improving if cycle use is increasing more steeply than cyclist casualties. Therefore targets and indicators for the effectiveness of road safety strategies should adopt 'rate-based' measures for improvements in cycle safety, e.g. cycle casualties (or fatal and serious injuries) per million km cycled, or per million trips. Simple casualty reduction targets should be avoided.
- 'Perception-based' indicators, which show whether public perceptions of cycle safety in a given area are getting better, can be used alongside 'rate-based' indicators, or as an interim substitute for the latter if necessary.

a. Rate-based targets/indicators

In the past, road safety professionals largely focused on reducing casualties in absolute terms, i.e. a drop in the *numbers* of people being killed or injured on the roads. This made some of them reluctant to encourage cycling on the basis that it could add to the casualty toll and make injury reduction targets difficult to meet. However, national policy is rightly to encourage *more* as well as *safer* cycling, so it is important to adopt targets and indicators that do not make professionals unwilling to increase cycle use – or, worse, that actually give them an incentive to discourage it.

The solution is to adopt 'rate-based' targets and indicators. They are a better means of judging whether road safety policies are succeeding because they reflect whether a road user's *exposure* to risk has increased or decreased. For instance, a target to halve the risk of serious and fatal cyclist and pedestrian casualties *per 100,000 km travelled* is preferable to an aim simply to reduce casualty numbers in absolute terms.

Although the *Government's Strategic Framework for Road Safety (2011)*²³ did not set targets (see 'Policy Background' below), its progress was monitored against indicators (at least until 2015), some of which are rate-based. These include the rate of pedal cyclist deaths per billion vehicle miles.²⁴

Rate-based targets, however, are problematic to monitor at local level because of the difficulties involved in gathering reliable local data on cycle use. If local authorities do decide to set numeric targets, therefore, Cycling UK urges them to exclude pedestrians and cyclists from them.

b. Perception-based targets/indicators

Another good measure of success is whether the public thinks that cycle safety is improving in a given locality. Fortunately, this is something that the 2011 *Strategic Framework for Road Safety* also embraced. Perception-based indicators can serve as a useful complement to rate-based indicators, as they focus local authorities' attention on tackling the fears that deter people from walking and cycling, rather than on pursuing the sort of scary 'road safety education' campaigns that put people, especially children and their parents, off cycling (see below).

Another advantage is that perception-based indicators are easily monitored at the local level, as data can be collected through existing public perception surveys (e.g. on public transport travel). Local authorities who do not have the ability to monitor cycle use in their area can still establish perception-based indicators, whilst developing the capacity to adopt rate-based indicators.





5. Cycle safety awareness campaigns

Cycling UK view: Care should be taken to avoid cycle safety awareness campaigns that 'dangerise' cycling. These deter people from cycling or allowing their children to cycle and are counter-productive because they erode the 'safety in numbers' effect, as well as undermining the wider health and other benefits.

While it is important to ensure that motorists and cyclists are properly informed about how to travel safely, both for their own and others' sake, making cycling look dangerous not only misrepresents the activity (see 1b), but may also adversely impact on cycle safety. As mentioned, there is good evidence that the more cycling there is, the safer cycling becomes. Conversely, campaigns that deter cycle use may undermine the 'safety in numbers' benefits for those who keep cycling (1c).

For more on awareness campaigns, see
www.cyclinguk.org/campaigning/views-and-briefings/cycle-awareness-campaigns-for-drivers

POLICY BACKGROUND

Strategic Framework for Road Safety (May 2011)

National action on road safety is outlined in the Government's road safety strategies, published at intervals. The latest is the *Strategic Framework for Road Safety*, based on the consultation draft *A Safer Way*. This covers the whole of Great Britain, although there are different approaches to road safety in Wales, Scotland, and England.²⁵ Key points for the whole of Great Britain are:

- **No targets** - despite strong calls from everyone involved in road safety.
- **Indicators:** Instead, the Government opted to measure not only the numbers of people killed or seriously injured (KSI) for different transport modes, but also the KSI rates per billion miles travelled. It also uses an indicator for public perceptions of the safety of walking and cycling (see section 4 above).
- **Speed limits/street design:** The Strategy promised a framework to help councils take account of all the relevant factors when setting local speed limits - including health, environmental and the community severance effects of higher speed roads, as well as economic factors. However, it fell a long way short of encouraging local authorities to regard 20 mph as the norm for most urban streets. Moreover, there is very little on encouraging authorities to adopt safer, more pedestrian-and-cyclist friendly street designs.
- **FPNs for careless driving:** One of the Strategy's headline proposals was to allow the police hand out fixed penalty notices (FPNs) for 'careless' driving offences, whilst encouraging the courts to make stronger use of their powers to confiscate and crush vehicles owned by those who persist in driving recklessly. The stated aim was to 'nudge' the generally law-abiding but occasionally careless driver into improving their behaviour, while freeing up the courts and police to devote their scarce resources to tackling the really serious offenders. FPNs for 'careless driving' were introduced in 2013.
- **Traffic policing:** The Strategy failed to promise any increased resource for road traffic policing. Funding decisions, it decided, should be taken locally in response to local priorities and with accountability to local communities. However, it is hard to see how local communities can take those decisions sensibly when the funds are lacking in the first place.
- **Lorries:** The Strategy made a commitment to reducing the risks of lorry drivers failing to see pedestrians and cyclists.

FURTHER READING & WEBSITES

- Cycling UK's briefings on safe drivers and vehicles: www.cyclinguk.org/campaigns/briefings
- *Focus on Pedal Cyclists*, DfT (analysis of road casualty figures for 2013). www.gov.uk/government/uploads/system/uploads/attachment_data/file/358042/rrcgb2013-02.pdf
- *Strategic Framework for Road Safety* (plus progress updates), DfT www.gov.uk/government/publications/strategic-framework-for-road-safety
- www.pacts.org.uk/ - The Parliamentary Advisory Council for Transport Safety
- www.roadpeace.org - National charity for road crash victims
- *Comparative fatality risk for different travel modes by age, sex, and deprivation* by Malcolm Wardlaw et al. www.sciencedirect.com/science/article/pii/S2214140517301457?via%3Dihub

¹ ETSC. *Ranking EU Progress on Road Safety: 10th Road Safety Performance Index Report*. June 2017. http://etsc.eu/wp-content/uploads/PIN_ANNUAL_REPORT_2017-final.pdf

² ETSC. *Making Walking and Cycling on Europe's Roads Safer*. PIN Flash Report 29. June 2015. http://etsc.eu/wp-content/uploads/etsc_pin_flash_29_walking_cycling_safer.pdf

³ DfT. *National Travel Survey: 2016*. Table 0304. July 2017

www.gov.uk/government/collections/national-travel-survey-statistics Note: until 2014, the NTS covered all of GB, but thereafter England only. However, trip rates for GB as a whole and England in particular are similar.

⁴ DfT. *Reported Road Casualties Great Britain: 2016*. Sept 2017. Table RAS30001. DfT defines 'serious' injuries as: "... an injury for which a person is detained in hospital as an "in-patient", or any of the following injuries whether or not they are detained in hospital: fractures, concussion, internal injuries, crushings, burns (excluding friction burns), severe cuts, severe general shock requiring medical treatment and injuries causing death 30 or more days after the accident."

⁵ See commentary in DfT's *Reported Road Casualties Great Britain (RRCGB) 2016*. Sept 2017.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/648081/rrcgb2016-01.pdf

⁶ DfT. *Reported Road Casualties Great Britain 2016*. Sept 2017. Table RAS30013.

www.gov.uk/government/collections/road-accidents-and-safety-statistics

⁷ DfT. *British Social Attitudes Survey 2016: Public attitudes towards transport*. August 2017.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/640297/british-social-attitudes-survey-2016.pdf

⁸ DfT. *Reported Road Casualties Great Britain: 2016*. Sept 2017. Table RAS40004 (link above).

⁹ DfT. *Reported Road Casualties Great Britain: 2016*. Sept 2017. Table RAS40004 (link above).

¹⁰ Calculation based on billion vehicle miles travelled by pedal cycle per year, (= 3.28bn averaged over 5 years, 2012-16), and number of cyclist fatalities per year (= 108 averaged over the same period). Figures from the DfT (road traffic stats, Table TRA0401; and road accidents and safety stats, Table RAS30001), www.gov.uk/government/organisations/departments-for-transport/about/statistics

¹¹ Calculation based on: GB population estimates (www.ons.gov.uk); average number of cycle trips per person per year (DfT *National Travel Survey*, Table NTS0409 = 16.2 <https://www.gov.uk/government/collections/national-travel-survey-statistics>); average number of cyclist fatalities per year = 108 (DfT GB *Reported Road Casualties* annual report, Table RAS30001 (link above)).

¹² Calculation based on: average time spent cycling per person per year = 6 hours (DfT *National Travel Survey*, Table NTS0310, link above). GB population estimates (www.ons.gov.uk); average number of reported cyclist injuries per year = 19,427 reported injuries (all severities) to cyclists per year (DfT GB *Reported Road Casualties* annual report, Table RAS30001 (link above)).

¹³ DfT. *Reported Road Casualties Great Britain: 2016*. Sept 2017. Table RAS30070 (link above).

¹⁴ Hillman M, *Cycling and the promotion of health*. Policy Studies vol. 14 pp49-58, 1993.

¹⁵ Jacobsen P. *Safety in numbers: more walkers and bicyclists, safer walking and bicycling*. Injury Prevention vol. 9 pp205-209, 2003. <http://ip.bmj.com/cgi/reprint/9/3/205>.

¹⁶ For instance, an academic study, *Mechanisms underlying cognitive conspicuity in the detection of cyclists by car drivers* (July 2017), found that "Cyclist-motorists had fewer collisions with cyclists and detected them at a greater distance." <http://www.sciencedirect.com/science/article/pii/S0001457517301343?via%3Dihub> / TRL research published in 2003 found that: "Whether a respondent cycled or not, not surprisingly, had an important effect on responses and attitudes. Those who were cyclists were in the favourable position of being able to see things from both the cyclist's and the driver's point of view [...] those drivers who cycled did have greater insight than other drivers did in some aspects. For example, they, not surprisingly, tended to know more about cycling facilities and how they operated. When looking at the scenarios, they could rely more on personal experience and talk about how they had reacted in real life. They could identify with such issues, as they knew that they were more commonplace than other non-cycling drivers thought (such as being 'cut-up' by a motor vehicle)." Reid, S et al, TRL. *Drivers' Perceptions of Cyclists*. 2003. www.trl.co.uk (search for title in 'reports and publications'). See also:

¹⁷ Cycling Embassy of Denmark. *New figures on cycling in Copenhagen break the record*. 1/6/2017.

www.cycling-embassy.dk/2017/06/01/new-figures-cycling-copenhagen-break-record/

¹⁸ DfT. *Road Traffic Estimates: Great Britain: 2016*. Sept. 2017.

www.gov.uk/government/uploads/system/uploads/attachment_data/file/611304/annual-road-traffic-estimates-2016.pdf

¹⁹ See <https://tfl.gov.uk/corporate/publications-and-reports/streets-toolkit>

²⁰ See <http://gov.wales/topics/transport/walking-cycling/activetravelact/implementation/?lang=en>

²¹ In reported road casualty statistics, HGVs are defined by the Department for Transport (DfT) as: "Goods vehicles over 3.5 tonnes maximum permissible gross vehicle weight"

www.gov.uk/government/uploads/system/uploads/attachment_data/file/462818/reported-road-casualties-gb-notes-definitions.pdf

Traffic figures from *Road Traffic Great Britain: 2016 (DfT)*, Table TRA0104; casualty figures from *Reported Road Casualties Great Britain 2016 (DfT)*, Table RAS40004. www.gov.uk/government/collections/road-accidents-and-safety-statistics

²² DfT. *Reported Road Casualties Great Britain: 2016*. Sept 2017 (link above).

²³ DfT. *Strategic Framework for Road Safety*. 2011. www.gov.uk/government/publications/strategic-framework-for-road-safety

²⁴ DfT. *Reported Road Casualties Great Britain: 2016*. Sept. 2017. Table RAS41001 (link above).

²⁵ Scotland - *Road Safety Framework to 2020 (2009)*: www.scotland.gov.uk/Publications/2009/06/05140447/1; Wales - *Road Safety Framework (2013)*: <http://gov.wales/topics/transport/road-users/road-safety-framework/?lang=en>; N Ireland - *Road Safety Strategy to 2020*: www.infrastructure-ni.gov.uk/publications/northern-ireland-road-safety-strategy-2020-annual-statistical-report-2016