

# THIS WEEK



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## Clarity needed on data protection

*As a commendable European law on personal data comes into force, the research community must not let excessive caution about data sharing, however understandable, become the default position.*

European policymakers have been discussing new rules on data protection for years, and scientists and universities — like everyone else across the continent — are about to see the results. Entering into force on 25 May, a new law known as the General Data Protection Regulation (GDPR), is designed to protect the personal privacy of citizens and will overhaul how personal data are collected, handled, processed and stored. It's a welcome move to safeguard individuals and is the biggest shake-up of data protection in more than 20 years.

However, as this journal has noted before, earlier drafts of the law posed a problem for science and the research community. Of particular concern was the issue of consent — the draft language suggested researchers would be required to seek renewed consent to reuse data collected for a different purpose, which could have introduced delays and made some research impractical. But many in the research community worked relentlessly to warn policymakers of the potential harm. In response, officials put in place rules that exempt research from some of the requirements, provided the proper safeguards are in place. Universities and organizations have introduced plans to make sure they are. The bulk of the work should be done.

The passing of the final GDPR rules is, therefore, a good example of political engagement by researchers and their advocates, and a sensible and informed reaction from policymakers. Those involved, on both sides, deserve great credit. Harmonization of how data can be sourced, stored and used would, in theory, be good for research. It could smooth the difficulties that scientists face when they try to pool analysis of genomic data and tissue samples across national borders. Such sharing could help scientists to organize powerful trials with large numbers of participants.

But although there is some cause for celebration, there are still outstanding issues. And that means that the same researchers and advocates must remain vigilant.

The problem is that individual European countries have been left to decide some issues for themselves — for example, how scientific data can be processed. This flexibility is intended to allow countries to fit the rules around existing systems and different cultures, but it might leave nations out of step. Researchers who work under different systems could struggle to share data with each other. That could lead to delays in negotiations between institutions wanting to create collaborative contracts that enable data sharing.

To help prevent this and to offer a unified approach, academics, industry representatives and patients have been meeting over the past year to distil the complex regulation into a user-friendly guide. This planned code of conduct aims to provide a simple 'how-to' guide for scientists, for example, by explaining differences in the way countries such as Germany and the United Kingdom define 'anonymized' data. The resulting Code of Conduct for Health Research, overseen by the biobank network BBMRI-ERIC (see J.-E. Litton *Nature* **541**, 437; 2017), is almost ready for consultation. But meanwhile, medical research

remains vulnerable to unintended consequences of the new law.

That's because, until the code of conduct is in place to offer clear guidance about how to comply with the GDPR, day-to-day decisions on how to interpret the law will be left to individual institutions' legal departments. It would be understandable if they chose to err on the side of caution and place restrictions on sharing data for fear of breaking the law.

Even when the code is finalized, it must still be approved by the European Data Protection Board (EDPB), which has not yet said how organizations can submit such codes for evaluation, or how long the process will take.

Some have argued that delays in the code becoming available could be beneficial, because they would allow the research community to thrash out the details of this complicated area of the law. But others worry that if the process drags on too long, medical research will suffer. What starts as a cautious position on how best to share data in line with the law could drift into normal practice.

That would be a missed opportunity and could risk undermining the good work done so far. Officials on the EDPB must not allow that to happen. The code must be approved and put into practice as soon as possible. It's important to protect people's personal data; but it's also important to ensure data can be used with integrity to support valuable research. ■

***"It's important to ensure data can be used with integrity to support valuable research."***

## Climate costs

*A strong financial case for urgent action on greenhouse-gas emissions has now been made.*

Published in 1991, an academic paper called 'To slow or not to slow: the economics of the greenhouse effect' is seen as the first attempt to model the economics of global climate change (W.D. Nordhaus *Econ. J.* **101**, 920–937; 1991). Written by the economist Bill Nordhaus, the 18-page study assessed the costs of acting on emissions and the estimated costs of not doing so, and concluded that it was better for the economics of the world to try to address the problem than simply to give up and take the consequences.

Economists and analysts around the world have repeated the exercise many times, most prominently with the British government's Stern Review in 2006 (N. Stern *The Economics of Climate Change: The Stern Review*; Cambridge Univ. Press, 2007). Almost all agree with the original conclusion: it will be much cheaper to spend the money on trying to curb emissions than to pay for the impact of the resulting

climate change. But how much cheaper? There's the rub.

A study in *Nature* this week offers the latest and most comprehensive attempt to address this question (see page 549). Marshall Burke and his colleagues modelled the impact of historical temperature changes on the gross domestic product (GDP) of 165 countries between 1960 and 2010. They then ran the model to the end of this century to plot what would happen to GDP according to how much average temperature rise was expected. The results show that greater action to curb temperature will bring greater economic benefits — which are, in reality, avoided damages, measured as the impact on GDP.

Specifically, there is a 75% chance that keeping global warming to a 1.5°C rise — an aspiration of the Paris climate treaty — will leave the world better off than letting it run to a 2°C rise. The probable savings: a cumulative US\$20-trillion increase in world GDP by the end of the century. (Global GDP in 2016 was about \$76 trillion.)

It's fair to say that not all of the world's economists and climate-policy wonks will be content to take the conclusions of the study at face value. Details matter, not least — as with all models — the kinds of assumptions made and data used. The Stern Review, for example, was quickly queried by economists who criticized the way in which it borrowed from the insurance industry and placed great importance on the needs of future generations, who are usually discounted in models of economic impact because it is assumed that they will be considerably richer and so better able to deal with problems than are today's generation.

In that spirit of debate, this week we also publish two — conflicting — opinions on this study in a News & Views Forum (see page 498). It provides a glimpse of the debate already raging in the economics community. One point of contention is how fair it is to simply extrapolate from past trends into the future. As finance experts are keen

to point out, past performance is not always a reliable guide to future yields, and in this case it could be that the people of the future will find ways to adapt to a changing climate that are not accounted for in the model. Such adaptation — the development and widespread introduction of drought-resistant crops, for instance — would offer a significant saving, because food prices would not increase so dramatically if harvests are protected.

**“Our burning of fossil fuel is writing cheques that our economy can't afford to cash.”**

Another feature of the new model is that it assumes that climate change, and the extreme weather it is expected to bring, will have a compound impact on the rise of a nation's GDP. Thus, a devastating storm or washed-out summer would affect not just that year's economic performance, but also its performance in subsequent years. Previous studies have taken a more optimistic view that any damage could quickly be compensated for.

There is a more fundamental issue, too. Just how reliable is GDP as a metric? Famously, it assumes that the market price of goods and services fully reflects the costs of their production and use. And the economics of climate change don't always do that: the price of fossil fuels, for one, doesn't take account of the costs associated with future warming.

Like all models, these economic projections will be argued over, worked on and ultimately improved. Scientists can gather the data to help that process, for example by expanding studies of the regional effects of climate change to poorer nations that are already bearing the brunt of the physical and economic impacts. Meanwhile, the arguments for acting on greenhouse-gas emissions, already many and varied, just got a little stronger. Our burning of fossil fuel is writing cheques that our economy can't afford to cash. ■

## Road to nowhere

*Electric cars are gaining ground fast but face fossil-fuel favouritism in the showroom.*

Who killed the electric car? According to the 2006 documentary of that name it was the automobile companies, and especially General Motors (GM), which produced, and then recalled and crushed, thousands of its pioneering EV1 model in the late 1990s. Arguments still rage about the company's true motives (GM insists it was down to high costs), but two decades on from the EV1 with its niche appeal, it's clear that reports of the death of electric vehicles have been greatly exaggerated. Sales in some places are booming. Figures from the Centre of Automotive Management in Gladbach, Germany, show that nearly half of the new vehicles registered in Norway during the first three months of this year were electric. During the same period, China sold more than 142,000 electric vehicles — still just 2% of the total numbers sold, but a large increase on last year.

What drives these sales? According to a study published this week in *Nature Energy* (G. Zarazua de Rubens, L. Noel & B. K. Sovacool *Nature Energy* <https://doi.org/10.1038/s41560-018-0152-x>; 2018), it's not the sales staff who work at car dealerships — at least not in most nations in Scandinavia. “Do not buy this, it will ruin you,” one prospective buyer was told when they asked about an electric car on sale. “Another would-be customer was gently steered away from an electric model because, the sales person wrongly insisted, it would take two days to drive 350 kilometres — roughly the distance between New York City and Washington DC.

We know this because, in these cases, the customers had no intention of buying a car — electric or otherwise. They were undercover university researchers, indulging in a little ‘mystery’ shopping to test industry attitudes and the barriers that remain to the widespread

adoption of new technologies. In this case, the attitude of the sales staff — largely driven by them not knowing as much about the electric models — was hugely influential. The study analysis suggests that it is the most important predictor of the likelihood that a customer will leave having bought an electric car — which the researchers calculated was a dismal 0% in many of the cities they visited.

In all, the researchers underwent 126 shopping experiences in 82 car dealerships across Denmark, Finland, Iceland, Norway and Sweden. (The ethics of mystery-shopping exercises have been questioned — they waste the time and money of the targets — so the researchers did not spend more than about ten minutes talking to the sales staff in each case.) They conclude that dealers were dismissive of electric vehicles and misinformed shoppers about vehicle specifications. In many cases, it took persistent questions from the mystery shoppers to get the electric-car dealers just to admit that yes, they did actually sell electric cars.

Why would car sales staff make it so difficult for customers to buy a car? Because they want them to buy a different kind of car. As the researchers point out, dealers “strongly oriented customers towards petrol and diesel vehicle options” on sale alongside the electric versions. And that behaviour is typical. The researchers argue that the attitude “mirrors industry and government favouritism towards conventional cars”.

Why does this matter? Electric cars are an important strategy for sustainable transport and have reached the point where sales to early adopters must start to give way to sales to a larger “early majority” (J. Lynes *Nature Energy* <https://doi.org/10.1038/s41560-018-0173-5>; 2018). There is a well-known and much-feared chasm between the two stages, and one that policymakers are trying to bridge with incentives such as subsidies, investment in infrastructure and privileged access to road space (such as allowing electric cars into lanes banned to other cars carrying no passengers). The mystery-shopping study highlights a new and important part of the bridge. Attitudes and incentives in dealerships must be changed — even simple steps such as better training and offering higher commission on successful sales of electric vehicles could help. ■