Last year brought what often felt like an avalanche of challenges. The global COVID-19 pandemic caused devastating personal, social, and economic consequences; extreme weather events underscored the impact of climate change; acts of racial injustice laid bare tensions and inequalities; and political turbulence highlighted a growing polarisation and erosion of trust in civic institutions. Yet, to move forward and restore resilience, sustainability, and justice to our communities, we must put lessons learned into practice. Evidence and objective analysis are needed to find lasting, effective solutions to these wicked problems.

At RAND Europe, we want our research to be integral to forming workable solutions. This year’s Spotlight highlights selected projects that responded to challenges arising from COVID-19, including a macroeconomic model to analyse ‘vaccine nationalism’ impacts; rapid research on providing high-quality healthcare under COVID-19 constraints; and finding ways to tackle domestic violence, which increased during lockdowns.

We also responded to other policy challenges beyond the pandemic. This issue of Spotlight features, for example a machine-learning model to fight online disinformation; a framework to assess climate change challenges systematically; and an analysis of emerging cybercrime threats. Our goal is to provide high-quality research and analysis that can improve people’s lives.

In 2021, we have ambitious plans to broaden RAND Europe’s impact by exploring how philanthropic gifts could allow us to examine new and cross-cutting areas of policy importance. We are excited by the opportunities this will create to build on our existing issue-based work and deliver deeper insights for our stakeholders and wider society.

As always, and particularly this year, thank you for your continued support of RAND Europe.

Hans Pung, President
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A global race is on to fast-track safe, effective COVID-19 vaccines. With several vaccines already authorised for use, rapid inoculation is underway in many countries. Many more vaccines are under development. With vaccines to protect their citizens, countries can start to rebuild their shattered economies and reignite global demand for goods and services. But will every country have access to the vaccines they need?

The cost of COVID-19 vaccine nationalism
Experience from past pandemics and the onset of COVID-19 suggests that national governments tend to follow their own interests rather than coordinate globally: pushing for first access to vaccine supplies, hoarding production components and potentially pricing out poorer nations. Our research shows that such ‘vaccine nationalism’ is misguided. If the virus is not brought under control everywhere, all economies will suffer (see opposite).

The benefits of ensuring equal access to vaccines far outweigh the costs.

RAND Europe used a multi-country macroeconomic model to assess the effect of different scenarios on global economic output, focusing particularly on economic output in contact-intensive sectors such as hospitality, recreation, retail, transportation and healthcare. We found that if higher-income nations funded the cost of supplying vaccines to lower-income countries, they would get back about $4.80 for every $1 spent. Even on the most conservative estimates, the benefit is at least $1.90 for every $1 spent. We recommend that:

- **Countries invest in global access to vaccines.** This will bring both economic and public health benefits.
- **Enforceable international frameworks are established for vaccine development and distribution.** Countries will then be less likely to limit supplies when it suits them.
Every nation for itself:
$1.2$ trillion per year GDP loss to the global economy

Only a few vaccine-producing nations are able to immunise their populations. Estimated GDP losses per year by country/region:

- **EU**: $311bn
- **USA**: $127bn
- **China**: $110bn
- **UK**: $41bn
- **India**: $26bn
- **Russia**: $18bn

Poor nations wait their turn:
$153$ billion per year GDP loss to the global economy

All vaccine-producing, high-income and middle-income nations have access to vaccines, but the poorest nations do not. Estimated GDP losses per year by country/region:

- **EU**: $40bn
- **USA**: $16bn
- **China**: $14bn
- **UK**: $5bn
- **India**: $3bn
- **Russia**: $2bn
One worrying consequence of COVID-19 has been an increase in domestic violence across the globe. Experts note that we are in fact tackling two pandemics together.

Sadly, domestic violence has a long history. It is also a largely hidden crime. While we know that most victims tell someone, and that many witnesses see or hear signs that something is wrong, very little is known about who such witnesses are and what factors affect their behaviour.

To shed more light on this, RAND Europe led a study for the European Institute for Gender Equality (EIGE) that examined four environments where intimate partner violence may be witnessed: among family and friends, among neighbours, in the workplace, and in health and social care settings. We interviewed adult witnesses of domestic violence and professionals who work with witnesses and victims, and held focus groups with members of the general public in Denmark, France, Germany and Portugal.

We found that many factors influence witness behaviour. Negative perceptions of the police may deter witnesses, or they may fear for their own safety. Intervening (though not necessarily reporting to the authorities) is considered easier if the witness has a close relationship with the victim, or has secured their consent and collaboration.

With COVID-19 trapping many victims in lockdown with their abusers, our findings have become even more pertinent, by showing ways to help witnesses help victims. EIGE has now asked RAND Europe to examine the measures being taken across the EU to protect and support women victims and their children, both during and in the aftermath of the pandemic. Our findings will be published early in 2021.
Democracy depends on hearing all voters’ voices

by Fook Nederveen

Organising safe, effective and timely democratic elections has become increasingly challenging due to COVID-19. In these difficult circumstances, governments have been increasing their efforts to guarantee that no voter is disenfranchised, by introducing or expanding remote voting options. The Dutch government, for example, has announced a temporary emergency law to allow additional mobile and special polling stations and three proxy votes per voter instead of two. Extending postal voting to all citizens, currently available only to Dutch citizens abroad, is also being considered.

We found that every EU country offers some form of remote voting, either to all voters or to specific
The risk of disenfranchising large parts of the electorate is real and should be prevented

groups, including postal voting, voting by proxy, online voting and mobile polling stations. Most member states offer postal voting to citizens living abroad; fewer do so for domestic voters.

Our study found no evidence that remote voting options increase turnout. They do, however, increase convenience and accessibility for some vulnerable voters – a status many people can claim during the pandemic.

In some countries postal voting became an important stake in the 2020 electoral landscape. Poland’s ruling Law and Justice Party, for example, hastily introduced new legislation to conduct its April presidential elections entirely by post, but opponents raised logistical, legal, democratic and security concerns.

In the end, voters in Poland were given the choice to vote by post or at a polling station in a June election. The first round saw near-record turnout (for post-communist Poland) despite the pandemic, but ultimately, less than one per cent of voters in Poland chose to cast postal ballots. Over 90 per cent of registered voters abroad voted by post, however.

Decisions to expand or introduce remote voting should be based on political consensus and informed by the potential risks, plus additional resource needs and other logistical and practical issues. The bottom line: countries should prepare well in advance to ensure that elections are fair and safe, and act transparently to prevent loss of public trust. Democracy depends on it.

About this study: Understanding how different voting options may facilitate participation could contribute to a wider European strategy for enabling civic engagement and democratic legitimacy.

In 2018, the European Commission commissioned RAND Europe and Open Evidence to examine the barriers to voting encountered by different groups of citizens and to assess the remote voting options offered in EU member states. These included postal; by proxy; voting from abroad; special and/or mobile polling stations; out of district voting; and online voting.

Fook Nederveen is an analyst at RAND Europe. His professional experience spans a range of research areas, including security, criminal justice and emerging technologies.
With floods, droughts, storms and other extreme weather events becoming more frequent, climate change could impact defence and security in a variety of ways. Researchers from RAND Europe and the University of Exeter, working as part of the Global Strategic Partnership (a consortium of research, academia and industry partners), are supporting the UK Ministry of Defence (MOD) to prepare its Climate Change and Sustainability Strategy. The project is assessing the implications of climate change for MOD activities to the year 2035.

In the first phase of the work, we designed a conceptual framework to help decision makers systematically assess the implications of climate change and develop a robust response. RAND Europe researchers met with stakeholders from UK and US government departments, NATO, the European Defence Agency and academia to create the framework, which is already attracting interest from other bodies wishing to take a systematic approach to climate change policy. A second study

Weather warning

How climate change may impact defence and security
is now underway to apply the framework in practice, looking specifically at military crisis response.

The initial study showed that in the future personnel may have to operate in climate-degraded conditions more often, affecting physical and mental wellbeing. Climate events could also:

- reduce access to training sites
- threaten military infrastructure
- impede the performance of equipment
- compromise the delivery of logistics support.

We found that the MOD should embed climate resilience into its strategic, operational and tactical planning. This would enable the MOD to monitor climate change impacts on allies and adversaries; provide leadership on key issues; leverage research and innovation to mitigate risk; and identify funding options to support future military aid and humanitarian activities. The full strategy will be published early in 2021.
Using big data to measure migration

Social media platforms such as Twitter and Facebook generate high volumes of data that could provide rich and up-to-date information on labour mobility and migration. Using such ‘big data’ could help to bridge the gap between new migration trends and official statistics, which can take a year or more to publish.

For this reason, the European Commission wished to explore whether social media data could be used to estimate real-time movements of people within the EU. RAND Europe led the study team, which included researchers from the Vienna Institute for Demography, the University of Manchester,
Washington University, the Qatar Computing Research Institute, and the Max Planck Institute for Demographic Research.

The results of the study were promising. Using geo-linked data from Facebook, in combination with official statistics, researchers were able to develop a groundbreaking model for estimating migrant stocks (the numbers of migrants residing in different EU countries). This approach could allow decision makers to see changes in migration trends almost instantly, such as a surge in arrivals from a particular region.

Researchers also attempted to develop a similar model using geo-tagged Twitter data to calculate migration flows (the number of migrants entering or leaving a country during a specified time period). However, this approach did not appear to show any advantage over official numbers.

We concluded that the proposed method for estimating migrant stocks could be improved further by investigating different migration models and collecting more data over a longer period from both national labour market surveys and Facebook. Additional research will be needed to develop a robust model to acquire near real-time information on migration flows in the EU.
With a land border to Russia and coastal waters that provide access to the North Atlantic and the strategically important Barents Sea, Norway plays a crucial defence and security role for NATO in the region known as the High North.

To help inform ongoing strategy and policy development, the Norwegian Ministry of Defence asked RAND to investigate the views of its closest NATO allies on the security challenges and strategic opportunities for Norway.

A transatlantic team from our European and US offices combined a literature review with field visits to interview civilian officials, military leaders and independent experts in Norway, Denmark, France, Germany, the UK and the US, plus NATO institutions.

We found that Norway is perceived as ‘punching above its weight’, with impressively high-end capabilities for a nation of its size. Significant security challenges remain, however. Our report suggested five strategic options to consider, including strengthening deterrence and increasing Norway’s ability to receive and support other Allied forces.
Cambridge has been identified as one of the least affordable housing markets in the UK, which creates challenges for local employers and decision makers. Recent research suggests that households earning less than £45,000 per year fall into a housing affordability gap and will struggle to afford suitable accommodation in the city, making it harder to recruit lower-paid essential workers.

Local business and academic membership body Cambridge Ahead asked RAND Europe to calculate how many households within the Cambridge travel-to-work area (TTWA), as defined by the ONS, could actually afford to live in Cambridge. Based on analysis of ONS microdata, we estimate that almost half (48%) the households in the TTWA have incomes below the £45,000 threshold, falling into the local affordability gap. The widest gaps are in areas north and east of the city, and in East Cambridgeshire, with local hotspots in Forest Heath, St Edmundsbury and Harlow. The smallest gaps are in more affluent areas of South Cambridgeshire.
As the COVID-19 pandemic puts extraordinary pressure on healthcare services worldwide, the need for rigorous evidence on how to provide safe, high-quality healthcare has never been clearer. The Healthcare Improvement Studies (THIS) Institute, a University of Cambridge-based research organisation, aims to create a world-leading scientific asset for the NHS through focused research into what works, what doesn’t, and why. THIS Institute is guided by a participatory ethos and RAND Europe is a central partner in its work. Our collaborations combine academic rigour with the real concerns of patients and staff, and this year included:

**Enhancing quality within specialisms**

Our partnership has spanned research to improve care quality and safety in specific clinical areas, including general practice, paediatrics and maternity care. A recently published study reviewed the evidence base on the use of paediatric early warning systems to help healthcare providers identify early signs of clinical deterioration and respond swiftly. We have also collaborated with THIS Institute and other partners to define the features that characterise safe maternity units.
Engaging all stakeholders

THIS Institute and RAND Europe have also worked closely together to explore innovative research and stakeholder engagement methodologies, for example, using new technology-enabled data collection methods to involve citizen scientists in research activity. We also completed a rapid evidence assessment exploring creative ways to engage the public with research using arts-based methods including visual arts, performing arts, games and immersive art installations.

Responding to COVID-19

With THIS Institute we embarked on rapid-response research into the challenges created by COVID-19, to help enhance the evidence base on providing high-quality healthcare under unique constraints. One research study included a rapid-response consultation of over 100 healthcare specialists to understand what quality care looks like when managing obstetric emergencies in women with suspected or confirmed COVID-19. Another study aimed to understand good practice when providing care remotely for both pregnant women and patients with a long-term condition. We also supported THIS Institute’s innovative project on an ethical framework for COVID-19 swab testing for NHS workers, which identified ethical considerations and provided practical recommendations to support improvement.
Some themes and practices that underpin high-quality care transcend specific clinical areas. Our work with THIS Institute also seeks to enrich the evidence base on improvement efforts and challenges more generally. For example, we conducted a rapid evidence review on what influences improvement processes in healthcare. This aimed to identify the key features of effective leadership; the nature, relationships and interactions that support an improvement culture; the requisite skills, capabilities and data environments; the importance of engaging patients, carers and the public in improvement efforts; and the importance of working as an interconnected system of individuals and organisations, influenced by internal and external contexts.
Investigating the future of cybercrime

Digital systems and Information Communication Technology (ICT) are transforming society, services and economic activity around the globe. But innovative new technologies can also create new opportunities for cyber-criminals to disrupt and defraud at scale. So how can governments and law enforcement agencies anticipate and tackle these emerging threats? RAND Europe’s Centre for Futures and Foresight Studies (CFFS) employed horizon-scanning and serious gaming to identify potential trends and develop actionable insights.

On behalf of the Estonian government, the European Commission asked us to assess how a range of new and emerging technologies might be used to commit cybercrime, and to propose ways to prevent or mitigate its impact. We identified seven emerging technology clusters (see opposite) with major implications for:

- Cyber-enabled crime – existing crime transformed in scale or form by technology, such as online fraud
- Cyber-dependent crime – crime that employs and targets digital systems, such as hacking.

New and emerging technologies will not operate in silos, but rather build and interact with one another in ways that create broader opportunities and challenges. An array of cross-cutting trends and implications will need to be considered – for example, increased connectivity speed and coverage; the ability to collect and analyse more data; and increasing reliance on a few proprietary technologies.

To tackle these threats, we recommend that the Estonian government:

1. Broaden cybercrime capacity through awareness, education and capacity building
2. Build a more agile legal, regulatory and organisational environment
3. Invest in the expertise, skills and research needed to defend against cybercrime.
IMPLICATIONS

**Artificial Intelligence (AI) / Machine Learning (ML)**
- Potential to increase automation, speed, frequency, efficiency and targeting of attacks
- Could increase the speed of cyber-detection, prevention and recovery

**Autonomous Devices and Systems**
- Possible to carry out disguised criminal acts, develop new criminal modi operandi or conduct large-scale, automated attacks
- May increase complexity of forensic investigations and complicate attribution of attacks

**Computing and Data Storage Technologies**
- Technological advances could facilitate exfiltration of data, storage and dissemination of non-consensual recordings and illicit data
- Could improve and automate detection of non-violent, financially motivated crimes

**Telecommunication Infrastructure**
- Could be leveraged to enhance anonymity, speed and capacity of criminal activity, or exfiltrate sensitive personal data
- Could be targeted to cause large-scale disruption

**Internet of Things (IoT)**
- Growing volume of data collected by the IoT may be vulnerable to theft, corruption, destruction, extortion or sale
- IoT devices increase the attack surface for cyber-dependent crime and can introduce new vulnerabilities in complex IT environments

**Privacy-Enhancing Technologies (PETs)**
- Could help criminals operate anonymously, making it harder to detect or investigate their activity
- PETs could be targeted to access confidential or private information

**Blockchain and Distributed Ledger Technologies (DLTs)**
- Could be manipulated for criminal purposes, for example by preventing transaction processing
- May be leveraged to store inappropriate content that is difficult to remove
Targeting early inclusion

Education systems around the world are facing unprecedented demands on their resources, ingenuity and determination, as schools strain to deliver learning under COVID-19 constraints. At times like this, high-quality research can be invaluable to decision makers. RAND Europe’s Education group has developed a strong portfolio of policy-relevant research across multiple areas of interest. We aim both to shed light on what works and to directly support policy makers in designing and implementing effective programmes.

A longstanding area of interest is the impact of early interventions on inclusion. In May 2020 we published findings from our evaluation of the Nuffield Early Language Intervention (NELI), a 20-week small-group programme targeted at reception pupils (aged 4–5) with weaker language skills. Trained teaching assistants use a variety of activities, including games, songs and stories, to build listening, speaking and vocabulary skills. Our randomised controlled trial involved 1,156 pupils across 193 schools, and was commissioned by the Education Endowment Foundation. We found that children in the NELI programme improved their language skills by the equivalent of 3 additional months’ progress on average, compared to peers. Based on these results, the UK Department for Education (DfE) has committed £9 million to roll out NELI to state primary schools in England under the government’s £1 billion Covid-19 ‘catch-up’ package. This will help thousands of children whose education has been impacted by the pandemic.

A RAND Europe policy memo on ways to strengthen early childhood education and care (ECEC) through inclusion added further to the evidence base on effective practices. The memo is one of a series for the online European Platform for Investing in Children (EPIC), which collects, evaluates and disseminates practices that improve outcomes for children at risk. Since access to high-quality ECEC remains low for disadvantaged families, the examples in the memo provide critical evidence to build a more cohesive and inclusive society.
The most fundamental goal of education is to help every child achieve their full potential. Policies to attract and retain excellent teachers are crucial to this goal, as is providing information to students about future opportunities. In 2020, RAND Europe helped develop actionable policy recommendations in both these areas.

Pupil numbers in the UK are rising, but teacher numbers have been falling for ten years. Worryingly, teachers increasingly leave for reasons other than retirement. The Office of Manpower Economics (OME) asked RAND Europe to measure the importance of pay, rewards and other factors for teacher retention. We surveyed 2,210 teachers using innovative discrete choice experiments (DCE) that asked teachers to choose between different scenarios:

- One DCE measured the relative importance of pay, rewards and workload.
- A second DCE included non-financial factors such as leadership and teaching environment.

We found that, while important, financial incentives do not drive retention. Many teachers would trade off higher pay and rewards for other benefits, such as more investment in their professional development, part-time options or fewer pupil behaviour challenges. The detailed insights from our scenarios could help policymakers and schools strengthen or highlight different factors that motivate teachers.

RAND Europe was also asked by Cambridge Ahead to assess how schools in Cambridge and Peterborough help students make informed career decisions, and how their services meet school leavers’ needs. We found that the majority of schools surveyed have stable careers programmes offering a wide range of services, including work experience placements and external advisers. However, we also found that schools seem to prioritise academic over technical and vocational career routes. Two-thirds of schools wished to expand work placement opportunities, but were limited by lack of resources. Our findings will help schools support leavers to make the right decisions for their future.
What the discrete choice experiments found:

Choice factors

**PAY AND REWARDS**
We looked at both pay and pensions. Teachers are significantly averse to financial losses, but other factors also shape their choices.

**PAY PROGRESSION**
Larger pay scale steps and a quicker rate of progress for performance that is rated as excellent are both valued.

**WORKPLACE CHARACTERISTICS**
Teachers highly value non-financial characteristics such as workload, professional development, flexibility to work part-time, school culture and teaching environment.

Other key aspects of the methodology

**TRADE-OFFS**
Teachers would be willing to trade off higher pay and rewards for other non-financial benefits.

**VARIED PREFERENCES**
Different sub-groups of teachers respond differently to different options.

**FORECAST**
Choice model insights are used to forecast the likely uptake of different employment packages or policy interventions.
Transforming healthcare innovation

The world in which healthcare innovation takes place has become more complex and dynamic. Societal, scientific and technological changes are increasing the demands and costs on healthcare systems, and present both opportunities and challenges for innovation.

In 2020, we set ourselves an aspirational objective: to bring together our insights from many years of work in this space, and think deeply about how we can connect the dots between different actors and needs towards a shared goal of beneficial and lasting impact on healthcare systems and on population health through healthcare innovation. This means looking systematically across our research for and with government agencies, industry, international organisations, healthcare service providers, charities, patient organisations and the research community (see opposite). We will build on the learning to inform and shape our future research activity for maximum impact.

By drawing on RAND Europe’s topic and methodological expertise – and our ability to convene different stakeholders – we can bring fresh multidisciplinary perspectives to bear on pressing healthcare innovation research and policy needs. We are exploring ties between changing healthcare system needs and emerging innovation opportunities to help decision makers develop creative, sustainable and scalable policy solutions.

Our longstanding commitment to research and analysis into healthcare innovation is underpinned by a fundamental belief in the potential of innovation to improve lives. In the coming year, we will further strengthen and expand our research in this space, including new projects on industry contributions to tackling antimicrobial resistance; improving care for patients with a rare disease; and understanding the financial ecosystem and stakeholder landscape for medicines research and development.

Taken together, these initiatives will help us better understand future evolution, trends and opportunities for transformational healthcare innovation.
A diverse and extensive body of past research: three example areas

**Broader societal value of innovation**
- societal impact of treating breast cancer early
- innovative approaches to cancer care
- impact of multiple sclerosis on society
- the future of atrial fibrillation management
- innovative payment models
- building effective health data ecosystems
- reusing health data

**Access to innovation**
- increasing innovation uptake by healthcare systems
- accelerating access
- fee systems for medicine assessment and pharmacovigilance

**Infectious diseases and antimicrobial resistance**
- using new financial instruments to spur innovation
- the economics of COVID-19 vaccine supply and distribution
- infectious disease surveillance and control
- antimicrobial resistance
Using machine learning to fight online trolls

by Linda Slapakova, William Marcellino, Kate Cox

Disinformation has become a central feature of the COVID-19 crisis. According to a recent poll, nearly half of all online news consumers in the UK are receiving false or misleading information about the pandemic. Carnegie Mellon University identified more than 100 inaccurate COVID-19 theories in 2020, including misleading stories about prevention, cures and emergency measures implemented by state and local authorities.

Because malign information and high-tech ‘deepfake’ imagery can spread so fast online, they pose a risk to democratic societies worldwide by increasing public mistrust in governments and public bodies. Understanding how online actors target countries’ vulnerabilities is a first step towards building wider resilience to manipulation.

The global nature of the pandemic makes it highly attractive to groups using disinformation to further their own agendas. Russia has coordinated false narratives with China which claim that the coronavirus was caused by migrants or originated as a biological weapon.
About this study: With social media increasingly used as a primary source of news, the spread of malign and false information online is a growing threat. There is an urgent need to find effective ways to spot junk news, cyber bullying, terrorist propaganda and political 'crowdturfing' campaigns, whether generated by humans or bots.

RAND Europe was commissioned by the UK Ministry of Defence (MOD) to develop a method for detecting malign use of information online and to identify approaches for combating disinformation. The study is part of a broader effort to develop the MOD’s behavioural analytics capability.

Linda Slapakova is an analyst at RAND Europe. Her expertise and experience relate to issues in the defence and security field, specifically emerging technologies, defence workforce and personnel issues, and transatlantic security and defence cooperation.

The model successfully identified the trolls by detecting manipulative ‘us-vs-them’ language

developed in a US military lab. Other false claims cite Russian ‘humanitarian aid’ to countries including the US and Italy. These efforts all act to undermine the resilience, recovery and crisis responses of national governments.

Public and private sector groups are now introducing countermeasures in an attempt to tackle online disinformation. These include initiatives to moderate content and social media algorithms to identify disinformation.

A new RAND Europe study helps strengthen these efforts further. Advances in machine or computer learning allow disinformation campaigns to extend their reach rapidly. Our work shows that a machine-learning model could help authorities fight back, by detecting malicious actors online and acting as a robust social media monitoring tool.

Our researchers analysed Twitter data from the 2016 US presidential election and used a computer model to distinguish the narratives of Russian ‘trolls’ from those of authentic political supporters. We found the model successfully identified the trolls by detecting manipulative ‘us-vs-them’ language used to target partisans and deliberately stoke discord.

The components of our model – community detection, text analysis, machine learning and visualisation – could also be effective in fighting other disinformation at scale, including COVID-19.
Imagine yourself injured, in pain and fleeing people who hate you for your skin colour, village or for the slogan on your t-shirt. Desperate and dehydrated, you arrive at a canvas tent plagued by flies. It has a red cross crudely painted outside, long a sign of hope and impartial care. Gradually you recover. But one afternoon you sense a rising panic, hear vehicles and shouting. You lie helpless with fear and watch unknown men go from bed to bed shooting each patient in the head. You are no longer safe.

Violence against healthcare services is a growing global phenomenon, yet it goes largely

**KEY RESEARCH GAPS ON VIOLENCE AGAINST HEALTHCARE**

We grouped the gaps into six themes and analysed these in more depth to pinpoint future research priorities – looking at potential impact and implementation, and their relevance to practitioners, policy makers and researchers.

**Nature of violence**
- motivations of perpetrators
- contextual drivers of violence
- pre-existing conditions that may influence violence
- potential role of gender dynamics
- roles of different actors outside healthcare

**Impacts of violence**
- effect on perceptions: fear, targeting, trust
- effect on access and on health services delivered
- further effects, e.g. decreased attendance, societal and wellbeing issues

**Interventions to reduce, prevent and mitigate violence**
- different organisational interventions: what works, what legitimises, what inflames
- best practices to share, appreciate, support and progress
unnoticed amidst the noise of conflict. A review of research on this topic for the International Committee of the Red Cross (ICRC) found worrying gaps in the evidence base (see below). While the number of studies about violence against healthcare has grown four-fold since 2009, 86 per cent of these look at higher-income countries and 94 per cent focus on non-conflict areas. This bias undermines our understanding of a critical function for humanity: protecting those who care for others, particularly in danger zones, and protecting those for whom they care.

**Contexts of violence**
- conflict zones
- non-Western settings
- hybrid or grey zone environments
- translating findings between contexts

**Research data**
- inadequate quantity and quality of data on violence in conflict settings
- incident-driven, few statistics on perpetrators or type of violence
- bias to urban settings, not harder-to-protect rural settings

**Research methods**
- applicability of surveys and questionnaires in conflict settings
- few participants
- subject area focus
- need for interdisciplinary study
EmBRACEing new healthcare directions

The BRACE Centre has been funded by the National Institute for Health Research to deliver rapid and rigorous evaluations of NHS services and share the findings with decision makers and staff to help them improve care. BRACE is a research partnership between RAND Europe, the Health Services Management Centre at the University of Birmingham and the Health Services Research Group at the University of Cambridge. Two recent studies looked at new approaches to identify policy implications.

**Primary care networks** were established across all of England in 2019 to help sustain groups of GPs and aid their provision of more integrated care to patients. BRACE researchers examined how networks were established, how well they are working, and what has helped or hindered their progress. We found that GPs have seized the opportunity to set up networks and implement new services. However, we also identified leadership and management challenges, tensions between local and national priorities, and a lack of clarity on how networks fit within the wider NHS. Rural networks faced particular challenges due to greater distances between GP surgeries.

**Vertical integration.** There is growing concern for the future of primary care in the UK, given rising patient demand and GP shortages. In several locations, the NHS organisations managing acute hospitals have also taken over the running of primary care practices. A BRACE team evaluated three sites where integration has occurred, to understand why and how it happened, identify barriers and enablers, and assess early impacts. We concluded that vertical integration is a valuable option to consider when GP practices look likely to fail, and may better integrate primary and secondary care. This should not be imposed top down, however, as many GPs do not wish to join such arrangements.
Vertical integration of GP practices with acute hospitals in England and Wales: What did we find?

The main driver behind vertical integration is to **sustain primary care provision** locally by avoiding closure of GP practices.

Vertical integration has developed further where there were good pre-existing relationships between primary and secondary care, and where **key individuals were active in providing leadership, energy and focus** for the integration.

The net impact of vertical integration on **health system costs appears either to be neutral or beneficial**. The main benefit to efficiency is the scope for better management of emergency patient flows to acute hospitals. Centralisation of back office functions may also offer modest savings.

**Governance and contractual arrangements differed** between the case studies. In the first case study, the contracts are run directly by the local health board. In the second, the practices are part of the NHS hospital trust. In the third, a separate company has been created, which is wholly owned by the local NHS hospital trust, to run GP services.

**Improving care pathways, and the efficiency of the local health economy**, for patients who are high users of emergency secondary care and/or living with complex or multiple morbidities, was a particular focus at two of the three sites.

The different operational practicalities and cultures of primary care and secondary care have required effort to bridge. The **main impact on ways of working has been in primary care**.
On the horizon: exploring frontiers

Emerging trends continually pose new questions that demand creative responses. RAND Europe applies critical thinking to evolving issues to generate new insights. Here are some selected research topics that will inform policy decisions during 2021.

FUTURE USES OF SPACE

In 1946 RAND conducted its first ever study, a ‘Preliminary Design of an Experimental World-Circling Spaceship’. The ‘space age’ would go on to transform science, technology, politics and society in the latter half of the twentieth century. Today, a new ‘space race’ is heating up, with private and commercial actors playing a growing role. The UK Space Agency has commissioned RAND Europe’s Centre for Futures and Foresight Studies (CFFS) to investigate potential transformative uses of space out to 2050, from lunar colonisation and space tourism to asteroid mining, and the threats and opportunities these present. The findings will help inform the UK’s first National Space Strategy.

INNOVATIVE TECHNOLOGIES AND THE 2040 BATTLEFIELD

Technological advances will bring profound changes in future armaments, military operations, warfare, and defence priorities. The European Parliament commissioned RAND Europe’s CFFS to forecast which technologies have the greatest potential to shape the future battlefield and how such impacts may materialise. This understanding will help inform future policies and investment decisions within a context of limited resources and competing priorities.
FIGHTING INFECTIOUS DISEASE

COVID-19 has exposed our vulnerability to an unforeseen infectious disease, and the severe consequences for societies and economies when we fail to prepare for or adequately control a pandemic. RAND Europe is completing a set of projects for the European Centre for Disease Prevention and Control on the use of technologies for infectious disease surveillance, prevention and control – for example, point-of-care testing devices, electronic health records and digital technologies. The projects consider infectious diseases generally and COVID-19 specifically, and build on RAND Europe’s deep expertise in both healthcare research and the analysis of emerging technologies.

‘NOWCASTING’ AND INTERNATIONAL MIGRATION

Big data collected from social media platforms can help policy makers track migration trends in near real-time. Building on our migration research for the EU, RAND Europe has received internal funding to develop a tool to ‘nowcast’ migration trends across the US, EU and other countries in order to inform decision making on international migration in near real-time, using data from the Facebook Marketing API.
On the horizon: strengthening societies

**SOCIETAL RESILIENCE**

As nations face growing challenges and threats ranging from political competition and climate change to new technologies and pandemics, national resilience is a key priority for governments. Resilient societies have a greater capacity to weather crises, and both the public and private sectors can help to build resilience as part of a whole-of-society approach. A study for the UK MOD is exploring the different approaches other nations are taking to enhance their societal resilience and how these could be transferred to UK society. RAND Europe is leading the work for the Global Strategic Partnership, an independent research consortium that supports the UK MOD’s Development, Concepts and Doctrine Centre.

**STRATEGIC AUTONOMY**

The challenges of Brexit, global political turbulence and a pandemic have led EU leaders to emphasise the need for greater EU ‘strategic autonomy’ and the related need to consolidate defence decision making under EU-level structures. Yet there has been little public discussion of the potential benefits – or threats – for the EU, the US or NATO of such a course. An internally funded cross-RAND team of European and US researchers is analysing the ways that strategic autonomy might take shape, and their implications, using a scenario-based approach. Separately and in parallel, RAND Europe is also supporting the UK MOD in its future planning for a post-Brexit world, as part of an Integrated Review of Security, Defence, Development and Foreign Policy.
EVALUATION INSIGHTS

A constant challenge for policy makers is that many public policy issues are deeply interconnected, but only a limited number of levers can be pulled at any one time. Expert evaluation can help clarify priorities by assessing the value of different interventions. Current work underway includes:

• A five-year evaluation of impact, accountability and value for money of the UK government’s £1.5 billion Global Challenges Research Fund, which supports cutting-edge research into the challenges facing developing countries. One key output will be a KPI framework to improve future learning.

• An urban health programme evaluation for Guy’s and St Thomas’ Charity in London. Complex evaluations at multiple levels are gathering evidence on societal determinants of health such as housing, debt, racism and labour markets. The findings will inform policy to help those most at risk of developing long-term conditions.

• Growing and strengthening our work to support family and corporate foundations by working with them to improve their strategies and deliver greater benefits. This includes gathering evidence and data on impact; helping to design interventions using theory of change logic; developing rigorous performance metrics to align behaviours and improve impact; and testing new approaches.

TRUTH DECAY IN EUROPE

2020 has brought into sharper focus a worrying trend that researchers at the RAND Corporation explored in 2018. They define Truth Decay as the diminishing role of facts and analysis in public life. RAND presented Truth Decay as a framework, unfolding four trends characterising the phenomenon but also its drivers, facilitators and root causes, and its consequences for democratic life. As RAND’s affiliate in Europe, RAND Europe has taken the Truth Decay Framework, developed as part of the research conducted within the US context, to provide insight into Truth Decay in Europe. This important research is an internally funded project conducted for the public good.
Council of Advisors

The members of our Council of Advisors bring a diversity of experience and depth of knowledge that enriches our work and extends our impact. We welcomed the appointment of two new members in 2020. Malik Dahlan is Principal at the Institution Quraysh for Law & Policy (iQ) and holds the Chair of International Law and Public Policy at Queen Mary University of London. An advocate for ethical investment, he participates on various boards and councils. Bridget Kendall, former BBC Correspondent, was appointed the first female Master of Peterhouse, the University of Cambridge’s oldest College, in 2016. She is the recipient of the James Cameron Award for distinguished journalism and an Honorary Fellow of several Oxford Colleges as well as the British Academy.

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NATO
OECD
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Open University
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The Health Foundation
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Velux Group
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Our expertise

Our researchers’ experience across a wide range of disciplines and methods brings depth and breadth to our work:

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