Imperial College London

Jameel Institute

Combating disease threats worldwide

Jameel Institute

Annual report

https://www.imperial.ac.uk/jameel-institute/

2022

Foreword

As we enter the endemic phase of SARS-CoV-2 and life in the UK returns to some form of normality, the Jameel Institute has pivoted its attention to focus on research priorities beyond the pandemic. This has been an exciting year as we have delivered some activities we had to pause due to COVID-19. These include public engagement events, convening experts from multiple disciplines across Imperial College London to discuss collaboration opportunities, and finalising our medium-long term strategy. This year, we prioritised cultivating new partnerships and building on existing collaborations to enhance capacity strengthening in countries and regions as they slowly emerge from the pandemic. Ministries of Health globally are prioritising pandemic preparedness, genomic surveillance and public health planning during peace time to ensure health systems are robust and efficient when another outbreak strikes. We see the Jameel Institute playing a pivotal role in supporting countries and organisations to better prepare for the future.

As we continue to provide real-time modelling to inform responses to new waves of COVID-19 around the world, we have also focused our efforts on other outbreaks, such as Monkeypox, Ebola and cholera and on increases in endemic diseases such as Tuberculosis (TB). These are all areas where the team has been able to support multiple in-country stakeholders, as well as work with WHO and other multilateral organisations.

I am delighted that our work on the economics of pandemic preparedness has been recognised as a critical area for further investment and am extremely grateful to Kenneth C Griffin and Community Jameel for providing essential funding. This will enable Professor Katharina Hauck and the team to continue to develop their integrated economic-epidemiological model further and provide in-depth support to specific countries. Thank you also to the Temasek Foundation and Temasek Trust for allowing us the opportunity to share our work with new potential partners and collaborators in Singapore earlier this year during the Philanthropy Asia Summit where we announced our new – 'Jameel Institute-Kenneth C Griffin Economics of Pandemic Preparedness Initiative.'

I am incredibly proud of how the team has continued to remain resilient and it has been a pleasure meeting the team in-person over the year to look beyond the pandemic, incorporate the lessons learned and refocus on our research priorities. We have also had the opportunity to realign some of the themes to reflect how the Institute's work will adapt to the challenges of the post-pandemic world.

Lastly, my sincere thanks to Community Jameel for championing the Institute and highlighting our work to partners and potential collaborators. Their flexibility has enabled us to support multiple stakeholders with the COVID-19 pandemic and has also helped us look forward to pandemic preparedness, genomic surveillance and health economics. We look forward to 2023.

Professor Neil Ferguson
Director of the Jameel Institute

Executive summary

2022 has been a year of firsts for the Jameel Institute. Institute researchers have continued to contribute to the Imperial College COVID-19 Response Team which in November 2021 was awarded a Queen's Anniversary Prize for "critical modelling and research in the face of the global COVID pandemic". The Prize, which the Royal Anniversary Trust runs, was set up to celebrate excellence and innovation in the UK further and higher education and to recognise work that benefits the wider world and public.

This year was the first since our launch where we have been able to look beyond the pandemic, realign our research priorities and strengthen and expand on existing and new partnerships that we formed during the pandemic. The start of the year gave the team a chance to reflect on the last two years and begin the development of the Institute's short- and long-term (5–15 years) strategy and review the areas the Institute aspires to prioritise with partners and further investment. Our vision is to expand our work and broaden our partnerships and geographic reach.

Provost Professor Ian Walmsley, Vice-Provost (Education and Student Experience) Professor Emma McCoy, and Professor Neil Ferguson attending the official presentation of the Queen's Anniversary Prize at St James's Palace

One example of how we are extending partnerships is the work of Professor Katharina Hauck and her team to develop an integrate epidemiological–economic model in collaboration with partners around the world. The model, which allows the economic, social and health outcomes of pandemic interventions to modelled in a coherent manner, has been applied to inform analyses for multiple countries, including Mexico, Indonesia and the Philippines. We have also been working with partners in Singapore to build epi-con modelling capacity across the region. This work provides a firm foundation for the recently announced 'Jameel Institute-Kenneth C Griffin Economics of Pandemic Preparedness Initiative', which will improve resilience to future pandemic threats (p.4).

With the emergence in late 2021 of the Omicron variant, the Institute released a number of reports on the relative rates of hospitalisation and mortality of Omicron compared with Delta, and the value of booster vaccines in reducing hospitalisation. As the SARS-CoV-2 virus becomes endemic, our focus has shifted towards pandemic preparedness and equipping policymakers to put plans in place to reduce the health, economic and social impact of future outbreaks (p.5)

Beyond our COVID-19 work, the team has continued to work on outbreak response, including around methodology for measuring and modelling transmissibility, and supporting policymakers in responding to the outbreaks of Monkeypox in several high-income countries during 2022 (p.6). Other research focused on air pollution and health impacts of fine particulate matter, which increases the risk of respiratory and cardiovascular disease, and on the developing modelling tools for COVID-19 in India and the Global South. (p.6).

We continue to work with international partners to strengthen health systems (p.7), including building modelling capacity in countries with a high burden of tuberculosis, to strengthen strategic planning in the context of an increase in global TB incidence for the first time in decades. With colleagues at Kamuzu University in Malawi, we have developed 'Thanzi La Onse/Health for All', a whole healthcare system model scheduled for launch in 2023. We also published research showing how the increasingly ubiquitous use of packaged water in Ghana risks undermining efforts to provide universal access to sanitation and clean water.

In June, the Institute had its first opportunity to engage children, young people and adults with our work through

the Great Exhibition Road Festival, organised by a consortium of academic and educational organisations. From 18–19 June, the Jameel Institute and the MRC Centre for the Global Infectious Disease Analysis hosted a range of activities for the general public to learn about mathematical modelling, understand which diseases came from which animal, and what viruses and diseases around the world have the potential to become pandemics. The feedback from the participants was extremely positive with adults and children both expressing how tangible and effective the games were in understanding modelling, zoonotic diseases, and current pandemics around the world.

In Autumn, the Institute hosted its first Away Day for the Jameel Institute team and a Collaboration Afternoon where external experts from across Imperial were invited to scope out areas for collaboration. We were joined by experts from The Grantham Institute – Climate Change and the Environment, Institute of Infection, Imperial College Business School, Centre for Health Economics and Policy Innovation, Imperial Engineering and the MRC Centre for Global Infectious Disease Analysis. One area discussed was looking at bringing together expertise on climate and health, which the Institute has been engaging in over the last 12 months. Dr Thomas Rawson's report, 'Climate change and communicable diseases in the Gulf Cooperation Council (GCC) nations', contributed to a wider report produced by Community Jameel and the AEON Collective for the GCC. This has been one of our first engagements in climate and health and we are actively scoping out further potential collaborations in this research area.

We have continued to communicate our work through various public platforms and outlets, albeit at a somewhat lower frequency than in the height of the pandemic. In February, Professor Neil Ferguson featured in The Guardian on the outlook of COVID-19 waves in the UK. The article focused on the bumps in the road and the lessons learned from the pandemic, including vaccine development, speed of policymaking and data-based decision making. In April, Professor Katharina Hauck authored a commentary on China's Zero COVID-19 strategy, published in Think Global Health. During the Philanthropy Asia Summit, Professor Hauck spoke about the importance of pandemic preparedness in an interview with Channel News Asia. Lastly, the Institute has launched a new video which features our academics talking about our work to date and our plans for the future.

The Jameel Institute–Kenneth C Griffin Economics of Pandemic Preparedness Initiative

The Institute is excited to announce the Jameel Institute–Kenneth C Griffin Economics of Pandemic Preparedness Initiative. This initiative will use pioneering integrated economic-epidemiological modelling to provide critical data and analysis to inform public health decisions related to pandemic preparedness and disease outbreaks around the world.

Under the leadership of Katharina Hauck, Professor for Health Economics and Deputy Director of the Jameel Institute, the new initiative brings together epidemiologists, economists and data modellers from across Imperial, together with researchers from the World Health Organisation and Singapore's Programme for Research in Epidemic Preparedness and Response (PREPARE), National Centre for Infectious Diseases and Umeå University in Sweden.

There are four key outputs for the project:

- Scientific development of the model – This is the main part and will focus on improvements in how we analyse economic shocks and short-, mid- and long-term economic impacts, economic and social impacts of interruption to education, and modelling of behaviour change and its impact on health and economic impacts.
- Development of an online dashboard – Scenario-based dashboard modelling preparedness levels of projecting scenarios for 150+ countries by year four.
- Capability building – Starting in Singapore and then broadening our support to the wider region.
- In-depth country case studies – One per year following initial connection and discussion with selected countries.

We are deeply grateful for Community Jameel and Kenneth C Griffin's support of this vital initiative. Thank you for enabling our researchers provide tangible solutions that equitably meet the needs of all communities and help ensure global resilience to future pandemic threats.

COVID-19 – where are we now

Late last year, the emergence of the Omicron variant was a Variant of Concern (VOC) and we continued to see waves of sub-variants of Omicron in the UK and around the world. The Imperial College COVID-19 Response Team released three reports in quick succession on the impact of Omicron, the value of booster vaccines and hospitalisation risk.

Since January 2020, the team have published 51 reports. These reports and additional analyses fed into the UK Scientific Advisory Group for Emergencies and policymaking in WHO and other countries. Our work in report 50 evaluating the severity of Omicron then later fed into a collaborative analysis of this issue with UKHSA, later published in the Lancet.

Professor Neil Ferguson is a member of the WHO SAGE COVID-19 vaccines working group, co-chairs the related modelling sub-group and is also a member of the WHO COVID-19 Epidemiology Technical Advisory Group. In those roles, he has contributed multiple aspects of the Institute's work on COVID-19 vaccines as well as more general epidemiological analysis. He has also contributed to and authored multiple papers on the impacts and trajectory of the different variants, including a UKHSA-led paper which compared the hospitalisation and mortality risk of SARS-CoV-2 variant Omicron sub-lineage BA.2 with that of BA.1, published in Nature Communications. He co-authored a paper published in the Lancet on the risk of hospitalisation and death associated with Omicron and Delta variants in England in a large national cohort study. This was the largest study to date on the relative hospitalisation and mortality risks for cases with the Omicron variant compared with Delta. The results suggest that confirmed Omicron cases had 59% lower risk of hospital attendance and a 69% lower risk of death than that of confirmed Delta cases.

In February this year, the Imperial College COVID-19 Response Team published Report 51 – Valuing lives, education and the economy in an epidemic: societal benefits of SARS-CoV-2 booster vaccine in Indonesia. This report projected the socio-economic gains of vaccinations in terms of averted deaths, averted economic losses and averted educational losses, with the dynamic epidemiological and economic model, DAEDALUS, applied to Indonesia. They modelled a twelve-month modern booster vaccination campaign, beginning in September 2021, with 80% target coverage against a counterfactual of no boosters. The team, led by Professor Katharina Hauck, have been projecting health and economic outcomes of alternative mitigation scenarios and vaccination schedules using economic-epidemiological modelling with our DAEDALUS model, which has since been published in Nature Computational Science. In addition, the team have been working closely with governments, public health agencies and economists in the countries, as well as WHO, other UN agencies, and their regional offices. This work by the DAEDALUS team will be further developed under the Jameel Institute-Kenneth C Griffin Economics of Pandemic Preparedness Initiative. Finally, they have also contributed to work on Return on investment (ROI) to pandemic preparedness using DAEDALUS for four countries, and coordinated a literature review on integrated economic-epidemiological modelling, commissioned by WHO.

In July, Dr Anne Cori and team published a paper in eLife on understanding the role of health care workers in transmitting SARS-COV-2 in hospitals. The paper showed that transmissions between health care workers was more limited in transmission than between patients and health care workers. The findings highlighted gaps in infection control and suggested possible areas of improvement to limit the extent of nosocomial transmission.

Earlier this year, Professor Edward Gregg and team published a paper in the International Journal of Obesity on the Edmonton Obesity Staging System (EOSS), describing how a clinical classification tool that assesses obesity related comorbidity was compared to BMI, with respect to adverse COVID-19 outcomes. 1,071 patients were evaluated in 11 COVID-19 hospitals in Mexico where patients were classified into EOSS stages. Adjusted risk factors for COVID-19 outcomes were calculated and survival analysis for mechanical ventilation and death was carried out according to EOSS stage and BMI category. The team concluded that the EOSS was associated with adverse COVID-19 outcomes, and it distinguished risk beyond BMI.

Professor Majid Ezzati, Dr Bin Zhou and team's paper entitled 'Lessons Learned and Lessons Missed: impact of the coronavirus disease 2019 (COVID-19 pandemic) on all cause mortality in 40 industrialised countries in US states prior to mass vaccination', was published on Wellcome Open Research. The paper concluded that prior to widespread vaccine-acquired immunity, minimising the overall death toll of the pandemic requires policies and non-pharmaceutical interventions that delay and reduce infections, effective treatments for infected patients and continued routine healthcare.

The Real-Time Assessment of Community Transmission (REACT) studies began in May 2020 and provided valuable information to the UK government on current infection rates across the whole population and the prevalence of antibodies. This information informed critical national policy decisions in England. By the end of the REACT project, over 2.5 million swabs in total were tested. A highlight of Professor Helen Ward's work on REACT in the last few months was the publication of a Nature Communications paper characterising population antibody responses to vaccination. She has also worked on validating the use of mass self-testing for antibodies in the community, including the development of a machine learning tool to support auditing of home-based self-testing.

As the world now begins to transition to the endemic phase of SARS-CoV-2, the Institute has pivoted towards looking at pandemic preparedness to support policymakers and others in government to plan, prepare and focus on preventing huge shocks to the economy and the health sector when another outbreak hits.

Research overview

Outbreak response

Outside of our work on COVID-19, our team has continued to support policymakers on new infectious diseases. In May 2022, a number of high-income countries saw outbreaks of Monkeypox, principally focused within MSM (men who have sex with men) communities. The team has been working closely with UKHSA to understand the epidemiology of the outbreak in the UK and to model potential mitigation and intervention measures.

In June 2022, Dr Anne Cori and team evaluated the use of the R number in measuring the transmissibility during outbreaks. Their paper, published in PLOS Digital Health, identified issues in current approaches, including the quality of input incidence data, the inability to account for geographical factors, and other methodological issues. The team concluded that there are significant gaps which need to be addressed to enable easier, more robust and applicable estimation of Rt during epidemics. The team have a follow up paper which addresses one of these issues, i.e. enables estimations of R from coarsely aggregated data.

Professor Timothy Hallett contributed to the paper published in the Royal Society in August this year as part of the theme issue focused on 'Technical challenges of modelling real-life epidemics and examples of overcoming these'. In the paper, the team showed how to construct simple model of immune response to a respiratory virus and a model of transmission using an easily modifiable set of rules allowing further refining and merging the two models together.

Responding to health emergencies

Air quality and pollution remains a huge health emergency in several low-to-middle income countries. Professor Majid Ezzati and team conducted a systematic review of studies measuring personal fine particulate matter (PM 2.5) exposure in low- and high-income countries. PM 2.5 is the air pollutant that poses the greatest risk to health globally, affecting more people than other air pollutants. Chronic exposure to PM 2.5 considerably increases the risk of respiratory and cardiovascular diseases in particular. The review, published a paper in Science of the Total Environment, found that PM 2.5 exposure studies have increased since 2015. Inequalities in the magnitude of exposure were identified by the countries income status and recommendations to advance personal exposure research were discussed.

Professor Nimalan Arinaminpathy recently published learnings from trying to develop modelling resources during a pandemic. The paper in the BMJ Global Health, with senior collaborators from the Indian Council for Medical Research, covered improving the accessibility of models built within country contexts in the Global South. They shared the development of their user-friendly, web-based modelling simulator in partnership with public health experts and health administrators for subnational planning. They describe their experiences of developing and deploying the simulator, for use by state-level planners to prepare for successive waves of COVID-19 in India,and propose recommendations for such initiatives in other countries in the Global South: early preparation will be the key for pandemic management planning, including the establishment of networks with potential simulator users.

Strengthening health systems

As well as continuing to focus on tuberculosis (TB), Professor Nimalan Arinaminpathy and collaborators also looked at the question of rapid vaccine development. COVID-19 has demonstrated the ability to fund and expedite vaccines for global pandemics. Influenza presents an important case study as it is one of the few infections that causes substantial public health burden in its endemic form while also having proven pandemic potential. In a paper published in Science, they offer the first step in bringing together the value proposition of future influenza vaccines by considering two key characteristics: the breadth of protection that vaccines offer and the duration for which protection remains effective. They also explore the current policy environment for vaccine development and make recommendations such as the need for a global market with regional production capacity to meet regional public health requirements. This paper was also covered in one of our episodes in Science in Context.

Professor Arinaminpathy has also contributed to the World Health Organisation's 'Global Tuberculosis Report' published in October 2022. This comprehensive report, released annually, presents estimates on the global burden of tuberculosis, alongside WHO's position on the key challenges facing the global TB response. The report highlighted that deaths and disease increased during the COVID-19 pandemic. Professor Arinaminpathy commented: "Following COVID disruptions, and for the first time in decades, we are seeing an increase in global TB incidence. These developments remind us how important it is, to increase momentum in the TB response." Given the increasing importance of modelling in burden estimation and strategic planning, one of his priorities is to expand capacity building in modelling amongst national TB programmes in high burden countries.

Professor Timothy Hallett, as Chair of the Modelling Guidance Group, presented the 'Case for Investment' to The Global Fund's 7th Replenishment Planning Conference in February 2022. The Global Fund Replenishment this year raised a total of $15.7 billion, which will contribute to driving down deaths from HIV, TB and malaria and help keep alive the prospect of achieving the global target of ending these diseases being major threats to health by 2030.

Professor Hallett continues to lead development of the whole healthcare system model – Thanzi La Onse, 'Health For All' – which will be formally launched by our partners at Kamuzu University of Health Sciences (Malawi) in February 2023. Uniquely, it provides an integrated overview of the functioning of the healthcare system and the demands placed upon it for the population it serves, and affords new insights into the optimal allocation of resources and the impact of many types of change that aim to strengthen healthcare systems.

Professor Ezzati contributed towards a paper in PLOS One and Environmental Research on Ghana. One paper looked at the trends in sachet water consumption and found significant increase in the use of packaged water where historically reliance on sachet water has been associated with the urban poor populations. However, recent evidence has shown the customer base crosses socioeconomic lines. The paper conducted a repeated cross-sectional analysis of three nationally representative data sets to examine the changing demography of sachet water consumers between 2010–2017. The results show that over the course of the study period, sachet water has become a ubiquitous source of drinking water in Ghana with relatively wealthy households notably increasing their consumption. The current rate and form of urbanisation, inadequate water governance, and an emphasis on cost recovery, pose significant challenges for the expansion of the piped water supply network, leading the team to conclude that sachet water will likely continue to be a prominent source of drinking water in Ghana for the foreseeable future. The main challenge for policymakers is to ensure that the growing sachet water market enhances rather than undermines Ghana's efforts towards achieving universal and equitable access to clean drinking water and sanitation.

Professor Edward Gregg and team undertook a multi-country analysis of mortality trends in type 1 diabetes. Mortality has declined in people with type 1 diabetes in recent decades. The paper, published in Diabetologia, examined how the pattern of decline differs by country, age and sex and how mortality trends in type 1 diabetes relate to trends in general population mortality. The results from six population-based cohorts found that all-cause mortality in people with type 1 diabetes has declined in recent years in most included populations. Regardless, improvements in mortality relative to the non-diabetic population are less consistent.

Building capacity and partnerships

Our collaboration with WHO allowed the health economics team the opportunity to adapt our DAEDALUS model for different country contexts. The team have provided support to policymakers in Mexico and Sri Lanka. Our projections for the Delta wave of COVID-19 in Sri Lanka directly impacted policy decisions and led to the country rolling out a longer lockdown to prevent high hospitalisation rates and high mortality within the population. The DAEDALUS team have also strengthened their partnership with the Global Centre for Development and co-authored a paper for a high-level panel for the G20 on the return on investment of pandemic preparedness.

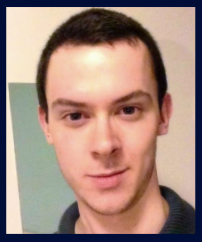
Spotlight Institute profiles

Dr Bin Zhou – Research Fellow

I co-led several projects in 2022 on a range of topics. These include examining the trends in growth in urban and rural areas among school-aged children and adolescents globally, quantifying the effect of using different biomarkers for diabetes surveillance in worldwide populations, and collaborating with colleagues from China to understand the contemporary trends in hypertension management in the Chinese population. I am excited to expand my research horizon through closer collaborations with colleagues in the Jameel Institute and beyond.

Dr Thomas Rawson – Research Associate

My primary project in 2022 was co-leading a mechanistic investigation of the impact of COVID-19 vaccine dosing interval. This project demonstrated the public health benefit of longer vaccine dosing intervals, and is currently in the final stages of review. I have also engaged in policy development projects, such as Aeon Collective's report 'The state of climate and health research in GCC' and the Academy of Scientific Research and Technology in Egypt's report 'Addressing Climate Change Impacts on Health'. Looking to 2023; I am finishing a new study investigating the spatial coupling of demographic factors and COVID-19 cases/ hospitalisations, and am excited to continue to build my skillset through collaboration with the broad skillsets showcased by the Jameel Institute's members.



Dr Patrick Doohan – Research Associate

I have continued with my health economics-themed research agenda, with a focus on health systems strengthening and pandemic preparedness. A key body of work has been a scoping review of integrated epidemiological-economic models, which was undertaken in collaboration with the WHO. During the early stages of the pandemic, there was a proliferation of new integrated models of joint health and economic outcomes, but due to the inter-disciplinary nature of the subject, it has been difficult to identify and compare various models. In the review, a framework for comparing integrated models was developed, various modelling approaches were discussed and compared, and limitations identified, which will aid the WHO in identifying the most suitable models for various country settings and the pandemic mitigation policy lessons to be learned. I have expanded on the pandemic preparedness work of last year to develop a multi-country tool to estimate the societal costs of various pandemics under different levels of preparedness.

Dr Amen-Patrick Nwosu – PhD student

My PhD project lies within the health systems strengthening theme and is focused on developing a digital early warning system against maternal sepsis in tertiary care. In the past year, I investigated the distribution and typology of electronic health records systems (EHRs) and digital sepsis alerts (DSAs) being used in NHS acute Trusts, and explored potential relationships between severe maternal sepsis and multiple predictors including clinical history and vital sign measurements. Additionally, I designed and piloted a survey to describe the landscape of EHRs and DSAs in Nigerian tertiary hospitals, and developed a service evaluation proposal to assess the feasibility of using the SNOMED-CT medical coding system for my project.

Tristan Naidoo – PhD student

I have spent the first year of my PhD investigating the relationship between Twitter usage and COVID-19 outcomes of interest (cases, hospitalisations, and deaths). I presented this work for my Early-Stage Assessment, which I passed allowing me to continue into the second year of my PhD. In the upcoming year, I aim to investigate how sentiment and disinformation relate to the same COVID-19 outcomes. This work will be an exciting intersection of Natural Language Processing, a subfield of Machine Learning, and Public Health. On a personal note, I have enjoyed living in a new country. The Jameel Institute has been supportive and helped me acclimatise to this new environment. I have enjoyed broadening my skillset both through interacting with its members and through the supervision I receive from its members. I look forward to continuing to do so in 2023.

Through our already established relationships with Institutes and organisations in Singapore, we have been actively scoping out potential local partners for a joint proposal we submitted to the Temasek Foundation's Philanthropy Asia Summit in September 2022. As mentioned above, we are working with the NCID and PREPARE teams to support capacity building in Singapore and across the region.

Our partnership with India has continued to grow. Professor Nimalan Arinaminpathy continues to provide advisory support to the National Tuberculosis Elimination Programme, as well as supporting independent, in-country capacity in modelling. As part of parallel efforts to develop capacity in mathematical modelling in India, he recently delivered the first of a series of workshops in mathematical modelling at ICMR's (India Interagency Expert Committee) new Institute for disease elimination. He is also working with colleagues at the Public Health Foundation of India to develop a course in mathematical modelling that will be delivered and accredited there.

Insitute-wide activities

Media coverage

The Jameel Institute has continued to communicate and raise awareness about our work via social media, print media, events, webinars and much more. We have maintained our role as an important voice in the public media nationally and internationally. Professor Neil Ferguson has been interviewed by a range of media outlets, including the BBC and ITV and has written pieces for the Financial Times, StatNews and other leading UK media outlets on the impact of new variants of concern (including the Alpha and Delta variants), the UK roadmap out of lockdown and the impact of vaccines.

Professor Katharina Hauck has also written a commentary piece for the Financial Times on UK hospital capacity and has been interviewed about the economic impacts of the coronavirus by several UK and international media outlets. She has also spoken at a virtual UK Embassy event in Saudi Arabia about the role of the Jameel Institute during COVID-19 to help promote and foster relationships within the region. Furthermore, In May 2022, the DAEDALUS Team co-led a webinar, hosted by the WHO, on integrated economic epidemiology modelling during COVID-19 response and its future applications to move the pandemic preparedness agenda. The webinar was received with enthusiastic reactions among the 214 viewers.

Earlier this year, Professor Helen Ward was interviewed by Times Radio about BAME communities in England being more likely to face a higher risk of contracting COVID-19 due to jobs and family structures.

At the start of the year, Professor Alice Gast, former President of Imperial College London, mentioned the Institute in a piece for the World Economic Forum's Davos Agenda about ways in which universities can future-proof education. She referenced our coursera 'Science Matters: Let's talk about COVID-19' and our ability to reach a large audience virtually. This fantastic online resource has attracted 146,118 learners to date.

Awards and recognition

The team have also been recognised for their contributions to support in managing the COVID-19 pandemic. The COVID-19 Response Team were thrilled to be the recipients of the Queen's Anniversary Prize for our world class response to COVID-19 and also received the SPI-M-O Award for modelling and data support for their exceptional contribution and support to the UK Government in response to the pandemic. Later in the year, the team were recognised for their contributions to the UK's COVID-19 response as part of this year's Weldon Memorial Prize. The prize is awarded annually by Oxford University for 'noteworthy contributions to the development of mathematical or statistical methods applied to problems in Biology'. The committee commented: "Under great pressure to deliver results quickly, and under immense public scrutiny, SPI-M-O both built on existing science and developed new epidemiological and statistical techniques to understand the spread of the virus and how it might be controlled. The importance of good and timely disease modelling for policymakers has never been as clear."

Beyond the Institute, Imperial were delighted to receive top ranking in the UK for 4* world leading research than any other university. The College was also ranked first in the UK for research outputs and research environment, and first for research impact among Russell Group Universities. Lastly, we were voted first in the UK for 4* world-leading research in public health, health services and primary care.

Events and public engagement

The Great Exhibition Festival

In June 2022, the Institute participated in its first public engagement event since our launch at The Great Exhibition Road Festival, an annual celebration of science and the arts in South Kensington. The team showcased our work on understanding the origin of diseases, how fast they spread in different communities, and mitigating interventions to stop or slow the spread of disease through fun games and activities. Our stand, 'Festival Fever' encouraged people to come and discover the origins of diseases, how to manage their spread in society and what infectious diseases exist today.

Team away day

In October, the Institute organised its first team Away morning which brought together all academics from across the Jameel Institute. This was the first time since our launch that most of the team had met in person to discuss our research priorities and our overall strategy. In the afternoon, we brought together academics from across the College including The Grantham Institute – Climate Change and the Environment, Institute of Infection, Imperial Business School, Centre for Health Economics and Policy Innovation, Imperial Engineering and the MRC Centre for Global Infectious Disease Analysis. One area discussed was looking at bringing together expertise on climate and health, and the Institute has been engaging in this space over the last year as mentioned above.

Jameel Institute Symposium

Our annual symposium, entitled: Preparing for the next pandemic: economics, behaviour and equity took place in November. The Institute brought together world leading experts, including leaders from academia, industry and the public sector, to share their experiences to inform decision makers and those working in public health on pandemic preparedness. This year focused on the necessity to take an interdisciplinary approach – spanning economic, social and behavioural sciences and epidemiology – in learning lessons about how the experience of the COVID-19 pandemic could help improved preparedness and responses to future pandemics.

We were joined by a range of experts including Dr Andrew Burns from the World Bank, Professor Dame Theresa Marteau, Director of Behaviour and Health Research Unit and Dr Tonatiuh Barrientos Gutierrez, Director of the Centre for Population Health at the National Institute of Public Health, Mexico.

"We know COVID-19 has had a huge impact globally, but the extent of the health and economic impacts have varied widely between regions and countries, as well as within countries. Bringing together expertise from a wide range of disciplines can help us to better understand the forces behind these varied outcomes, as well as inform researchers, institutions and decision makers so we are better positioned for future outbreaks."

PROFESSOR NEIL FERGUSON – DIRECTOR OF THE JAMEEL INSTITUTE

School of Public Health Building

Located within Imperial's thriving White City Campus, the new School of Public Health building will house state-of-the-art facilities and support research and education in public health for generations to come. The Jameel Institute's move to our White City Campus will bring together students and leading academics who are currently spread over multiple locations, and facilitate closer collaboration with engineers, clinicians, frontline healthcare professionals, and the local community.

The building is designed by Allies and Morrison, who also designed the neighbouring Sir Michael Uren Hub. The nine-storey building will provide nearly 58,000 sq ft of space and is being built and fitted out by Graham Construction. The new School of Public Health building has been designed to provide collaborative, flexible, and interactive spaces for academics, collaborators, students, and the local community. The build is continuing to progress to schedule with completion of the works on track for late 2023.

Thank you to Community Jameel and other philanthropists for their generous support of our new building.

Appendices

Publications

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