A. Medicine and Health

November 19, 2020 (NEJM)
Effect of Hydroxychloroquine in Hospitalized Patients with Covid-19
The RECOVERY Collaborative Group
https://doi.org/10.1056/NEJMoA2022926

This randomized, controlled, open-label platform trial compared hydroxychloroquine with usual care in patients hospitalized with COVID-19. The primary outcome tested was 28-day mortality. They found that among 4716 hospitalized adult patients with COVID-19 in the United Kingdom, those who were treated with hydroxychloroquine did not have a lower incidence of death at 28 days than those who received usual care.

November 19, 2020 (EClinicalMedicine)
Multi-center nationwide comparison of seven serology assays reveals a SARS-CoV-2 non-responding seronegative subpopulation
Kfir Oved, Liraz Olmer, Yonat Shemer-Avni et al.
https://doi.org/10.1016/j.eclinm.2020.100651

This multi-centre study performed clinical and analytical validation of seven serology assays to determine their utility and limitations for SARS-CoV-2 diagnosis. The authors found that the commercially available automated immunoassays exhibit significant differences in performance and expected positive predictive values in low prevalence scenarios. They also found that 5% of those with positive SARS-CoV2 PCR were seronegative non-responders, representing a proportion of patients that may be at risk for reinfection.

November 19, 2020 (JAMA Net. Open)
Pregnancy Outcomes Among Women With and Without Severe Acute Respiratory Syndrome Coronavirus 2 infection
Emily H. Adhikari, Wilmer Moreno, Amanda C. Zofkie et al.
https://doi.org/10.1001/jamanetworkopen.2020.29256

This cohort study evaluates the adverse outcomes associated with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection among pregnant women and describes clinical management, disease progression, hospital admission, placental abnormalities, and neonatal outcomes.
This case-control study examines the association of COVID-19 with the respiratory muscles in Dutch critically ill patients. The authors found evidence for ACE-2 expression and SARS-CoV-2 viral infiltration in the diaphragm of a subset of COVID-19–ICU patients. They also an increased expression of genes involved in fibrosis and histological evidence of diaphragmatic fibrosis. They hypothesize that severe diaphragm myopathy associated with COVID-19, may lead to diaphragm weakness and might contribute to ventilator weaning failure, persistent breathlessness, and fatigue in patients with COVID-19 who survive their ICU stay.

Nonpharmaceutical interventions (NPIs), such as social distancing, reduce not only COVID-19 cases but also other circulating infections such as influenza and RSV. The susceptible population for these infections will increase while NPIs are in place. Using models fit to historic cases of RSV and influenza, the authors project large future outbreaks of both diseases may occur following a period of extended NPIs depending on the transmissibility and evolutionary dynamics of circulating strains. These outbreaks, which may reach peak numbers in the winter, could increase the burden to healthcare systems.

Effective therapies are urgently needed for COVID-19. The authors identified a fully human monoclonal germline-like antibody (ab1) from phage-displayed libraries that potently inhibited mouse ACE2-adapted SARS-CoV-2 replication in wild-type BALB/c mice and native virus in transgenic mice expressing human ACE2 as well as in hamsters when administered before virus challenge. Ab1 was highly specific and did not bind to human cell membrane-associated proteins. It also exhibited good developability properties including complete lack of aggregation. Ab1 has potential for prophylaxis and therapy of COVID-19 alone or in combination with other agents.
B. Science and Engineering

November 6, 2020 (Environmental Research)
Exploring the linkage between PM$_{2.5}$ levels and COVID-19 spread and its implications for socio-economic circles
Syeda Mahnoor Ali, Fatima Malik, Muhammad Shehzaib Anjum et al.
https://doi.org/10.1016/j.envres.2020.110421

This paper focuses on how the particulate matter pollution was reduced during the lockdown period (23 March to April 15, 2020) as compared to before lockdown. Both ground-based and satellite observations were used to identify the improvement in the air quality of Pakistan. Both datasets have shown a substantial reduction in PM2.5 pollution levels (ranging from 13% to 33% in case of satellite observations, while 23%–58% in ground-based observations) across Pakistan. The result shows a higher rate of COVID-19 spread in major cities of Pakistan with poor air quality conditions. However, it can be partially attributed to both a higher rate of population density and frequent exposure of the population to enhanced levels of PM2.5 concentrations before the lockdown period.

November 5, 2020 (Education for Chemical Engineers)
Delivering remote food engineering labs in COVID-19 time
Marie Debacq, Giana Almeida, Kevin Lachin et al.
https://doi.org/10.1016/j.ece.2020.10.002

They describe implementing a remote educational device within a few weeks, designed as a viable alternative to conventional food engineering labs for Master level French students. Four engineering labs (corresponding to four unit operations widely found in the food industry) were transposed: appertization of cans; concentration in a falling film evaporator; frontal filtration in a plate filter; and spray drying. In the remote labs, hands-on experiments were replaced with various types of virtual tours of the equipment, a detailed description and illustration of its operation, and analysis of real data. The effectiveness of the system was evaluated through direct observation and discussions. The educational resources and practices implemented are an opportunity to develop new teaching methods in the future.

November 4, 2020 (Biomedical Signal Processing and Control)
Control of COVID-19 system using a novel nonlinear robust control algorithm
Musadaq A. Hadi & Hazem I. Ali.
https://doi.org/10.1016/j.bspc.2020.102317

The researchers introduce a new mathematical-engineering strategy to control the epidemic. A new robust control algorithm is introduced to compensate for the nonlinear system. The Most Valuable Player Algorithm (MVPA) is applied to optimize the parameters of the proposed controller. They
simulate based on the data from two cities Hubei (China) and Lazio (Italy) since the outbreak. It can be concluded that the proposed control algorithm can effectively compensate for the COVID-19 system.

October 22, 2020 (Materials Chemistry and Physics)
Review on 3D printing: Fight against COVID-19
Bankole I. Oladapo, Sikiru. O. Ismail, Temitope D. Afolalu et al.
https://doi.org/10.1016/j.matchemphys.2020.123943

The authors review the work on solving COVID-19 with 3D printing. Many patients who need to be hospitalized because of COVID-19 can only survive on bio-macromolecules antiviral respiratory assistance and other medical devices. A bio-cellular face shield made of bio-macromolecules polymerized polyvinyl chloride (BPVC) and other biomaterials are produced with 3D printers. Innovative adaptive manufacturing applications offers great potential.

C. Social Sciences, Humanities and Public Policies

November 16, 2020 (Technological Forecasting and Social Change)
Impact of COVID-19 on the travel and tourism industry
Marinko Skare, Domingo Riberio Soriano, Malgorzata Porada-Rochon.
https://doi.org/10.1016/j.techfore.2020.120469

The authors measure the potential effects of the COVID-19 pandemic on the tourism industry using panel structural vector auto-regression (PSVAR) on data from 1995 to 2019 in 185 countries and system dynamic modelling. Past pandemic crises operated mostly through idiosyncratic shocks’ channels, exposing domestic tourism sectors to large adverse shocks. Once domestic shocks perished (zero infection cases), inbound arrivals revived immediately. The pandemic is different and recovery of the tourism industry worldwide will take more time than the average expected recovery period of 10 months. Private and public policy support must be coordinated to assure recovery of the travel tourism sector during 2020–2021. Tourism managers must carefully assess the effects of epidemics on business and develop new risk management methods to deal with the crisis.

November 11, 2020 (Critical Sociology)
Human Rights-inspired Governmentality: COVID-19 through a Human Dignity Perspective
Enzo Colombo
https://doi.org/10.1177/0896920520971846

The paper aims to reconstruct the debate over the pandemic in Italy to highlight the logic of the discourse that guided the various voices. The two governmentalities that have monopolized the public and political debate are
biomedical and economic. The former brought the defence of biological life (zoé) as the ultimate element of truth and legitimacy of the government’s action. The latter, based on the “true” justification upon a careful cost-benefit calculation and the protection of the interests of homo oeconomicus. The debate lacked a “social” perspective capable of placing dignity and human rights as a guide for intervention. What has been lost by limiting the question to a choice between defending life or defending economic interests? A form of discrimination and lack of protection for specific sectors of society, in particular the marginal ones has emerged.

November 3, 2020 (Research in Globalization)
Sudden change of pedagogy in education driven by COVID-19: Perspectives and evaluation from a developing country
Temitayo Deborah Oyedotun.
https://doi.org/10.1016/j.resglo.2020.100029

The sudden transition to online pedagogy as a result of COVID-19 in developing countries has revealed some inequalities and challenges, as well as benefits. These challenges and inequalities have now become the new realities in the educational sector. The author suggests that the challenges presented by the new approach can be mitigated while we come to terms with the disruptions introduced by COVID-19 to our education sector.

November 2, 2020 (International Journal of Hospitality Management)
The effect of COVID-19 pandemic on domestic tourism: A DEMATEL method analysis on quarantine decisions
Fatma Altuntas & Mehmet Sahin Gok.
https://doi.org/10.1016/j.ijhm.2020.102719

We lack the knowledge on making the right quarantine decisions to reduce the negative effect of a pandemic on the hospitality industry. This study uses a decision-making trial and evaluation laboratory (DEMATEL) method to help in quarantine decisions. One of the critical hospitality industry indicators is the inter-regional travel flow between regions for local tourism. The findings indicate that Istanbul has an impact on Turkey and it might be adopted to prepare the hospitality industry during the pandemic.