References

Aktuell

Bendavid 2021

Eran Bendavid, Christopher Oh, Jay Bhattacharya & John P. A. Ioannidis, *Assessing Mandatory Stay-At-Home And Business Closure Effects On The Spread Of Covid-19.* European Journal of Clinical Investigation (2021), preprint, 1–21. DOI:10.1111/ECI.13484.

Background and Aims: The most restrictive non-pharmaceutical interventions (NPIs) for controlling the spread of COVID-19 are mandatory stay-at-home and business closures. Given the consequences of these policies, it is important to assess their effects. We evaluate the effects on epidemic case growth of more restrictive NPIs (mrNPIs), above and beyond those of less restrictive NPIs (lrNPIs).

Methods: We first estimate COVID-19 case growth in relation to any NPI implementation in subnational regions of 10 countries: England, France, Germany, Iran, Italy, Netherlands, Spain, South Korea, Sweden, and the US. Using first-difference models with fixed effects, we isolate the effects of mrNPIs by subtracting the combined effects of lrNPIs and epidemic dynamics from all NPIs. We use case growth in Sweden and South Korea, two countries that did not implement mandatory stay-athome and business closures, as comparison countries for the other 8 countries (16 total comparisons).

Results: Implementing any NPIs was associated with significant reductions in case growth in 9 out of 10 study countries, including South Korea and Sweden that implemented only lrNPIs (Spain had a non-significant effect). After subtracting the epidemic and lrNPI effects, we find no clear, significant beneficial effect of mrNPIs on case growth in any country. In France, e.g., the effect of mrNPIs was +7 % (95CI -5 %-19 %) when compared with Sweden, and +13 % (-12 %-38 %) when compared with South Korea (positive means pro-contagion). The 95 % confidence intervals excluded 30 % declines in all 16 comparisons and 15 % declines in 11/16 comparisons.

Conclusions: While small benefits cannot be excluded, we do not find significant benefits on case growth of more restrictive NPIs. Similar reductions in case growth may be achievable with less restrictive interventions.

Buss 2021

Lewis F. Buss et al., *Three-quarters attack rate of SARS-CoV-2 in the Brazilian Amazon during a largely unmitigated epidemic.* science **371** (2021), 288–292. DOI:10.1126/science.abe9728.

s371-0288-Supplement.pdf

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) spread rapidly in Manaus, the capital of Amazonas state in northern Brazil. The attack rate there is an estimate of the final size of the largely unmitigated epidemic that occurred in Manaus. We use a convenience sample of blood donors to show that by June 2020, 1 month after the epidemic peak in Manaus, 44 %of the population had detectable immunoglobulin G (IgG) antibodies. Correcting for cases without a detectable antibody response and for antibody waning, we estimate a 66 % attack rate in June, rising to 76 % in October. This is higher than in São Paulo, in southeastern Brazil, where the estimated attack rate in October was 29 %. These results confirm that

when poorly controlled, COVID-19 can infect a large proportion of the population, causing high mortality.

Lewis F. Buss, Carlos A. Prete Jr., Claudia M. M. Abrahim, Alfredo Mendrone Jr., Tassila Salomon, Cesar de Almeida-Neto, Rafael F. O. França, Maria C. Belotti, Maria P. S. S. Carvalho, Allyson G. Costa, Myuki A. E. Crispim, Suzete C. Ferreira, Nelson A. Fraiji, Susie Gurzenda, Charles Whittaker, Leonardo T. Kamaura, Pedro L. Takecian, Pedro da Silva Peixoto, Marcio K. Oikawa, Anna S. Nishiya, Vanderson Rocha, Nanci A. Salles, Andreza Aruska de Souza Santos, Martirene A. da Silva, Brian Custer, Kris V. Parag, Manoel Barral-Netto, Moritz U. G. Kraemer, Rafael H. M. Pereira, Oliver G. Pybus, Michael P. Busch, Márcia C. Castro, Christopher Dye, Vítor H. Nascimento, Nuno R. Faria & Ester C. Sabino

Callaway 2021

Ewen Callaway, *Could New Covid Variants Undermine Vaccines? Labs Scramble To Find Out.* nature **589** (2021), 177–178.

Researchers race to determine why lineages identified in Britain and South Africa spread so quickly, and whether vaccines will be less effective against them.

[. . .] within 90 days, the virus had picked up 3 mutations that made it impervious to the person's serum.

[. . .] his team reported that E484K and several other mutations can escape recognition by antibodies in convalescent sera to varying degrees.

Dolgin 2021

Elie Dolgin, *How Covid Unlocked The Power Of Rna.* nature **589** (2021), 189–191.

Kupferschmidt 2021

Kai Kupferschmidt, *Viral evolution may herald new pandemic phase.* science **371** (2021), 108–109. DOI:10.1126/science.371.6525.108.

Scientists worry about another 'very, very bad' wave, argue for stricter control measures.

Mallapaty 2021

Smriti Mallapaty, *What The Data Say About Border Closures And Covid Spread.* nature **589** (2021), 185.

Models estimate that travel restrictions worked early in the pandemic, but then became less effective.

travel restrictions weren't justified later in the pandemic except [. . .] or in regions with low transmission that wanted to keep the virus out

Preventing travel from high-prevalence countries would be sufficient to reduce exposure in many regions, says Jit.

Park 2021

Sang Woo Park et al., *Forward-looking serial intervals correctly link epidemic growth to reproduction numbers.* PNAS **118** (2021), e2011548118. DOI:10.1073/pnas.2011548118.

pnas118-e2011548118-Supplement.pdf

The reproduction numberRand the growth rate r are critical epidemiological quantities. They are linked by generation intervals, the time between infection and onward transmission. Because generation intervals are difficult to observe,

epidemiologists often substitute serial intervals, the time between symptom onset in successive links in a transmission chain. Recent studies suggest that such substitution biases estimates of R based on r. Here we explore how these intervals vary over the course of an epidemic, and the implications for R estimation. Forward-looking serial intervals, measuring time forward fromsymptom onset of an infector, correctly describe the renewal process of symptomatic cases and therefore reliably linkRwith r. In contrast, backward-looking intervals, which measure time backward, and intrinsic intervals, which neglect population-level dynamics, give incorrect R estimates. Forward-looking intervals are affected both by epidemic dynamics and by censoring, changing in complex ways over the course of an epidemic. We present a heuristic method for addressing biases that arise from neglecting changes in serial intervals. We apply the method to early (21 January to February 8, 2020) serial interval-based estimates of R for the COVID-19 outbreak in China outside Hubei province; using improperly defined serial intervals in this context biases estimates of initialRby up to a factor of 2.6. This study demonstrates the importance of early contact tracing efforts and provides a framework for reassessing generation intervals, serial intervals, andRestimates for COVID-19.

Sang Woo Park, Kaiyuan Sun, David Champredon, Michael Li, Benjamin M. Bolker, David J. D. Earn, Joshua S. Weitz, Bryan T. Grenfell & Jonathan Dushoff

Significance: The generation and serial interval distributions are key, but different, quantities in outbreak analyses. Recent studies suggest that the two distributions give different estimates of the reproduction number R as inferred from the observed growth rate r. Here, we show that estimating R based on r and the serial interval distribution, when defined from the correct reference cohort, gives the same estimate as using r and the generation interval distribution. We apply our framework to COVID-19 serial interval data from China, outside Hubei province (January 21 to February 8, 2020), revealing systematic biases in prior inference methods. Our study provides the theoretical basis for practical changes to the principled use of serial interval distributions in estimating R during epidemics.

Polizzi di Sorrentino 2020

Eugenia Polizzi di Sorrentino, Benedikt Herrmann & Marie Claire Villeval, *Dishonesty is more affected by BMI status than by short-term changes in glucose.*   Scientific Reports **10** (2020), 12170. DOI:10.1038/s41598-020-68291-w.

SciRep10-12170-Supplement.pdf

There is evidence that human decision-making is affected by current body energy levels and physiological states. There is less clear evidence linking decision-making to long-term changes in energy, as those associated with obesity. We explore the link between energy, obesity and dishonesty by comparing the behaviour of obese and lean subjects when hungry or sated while playing an anonymous die-under-cup task. Participants performed the task either before or after breakfast. We find that short-term switches in energy have only a mild effect on dishonesty, as only lean females lie less when sated. By contrast, obese subjects lie more than lean subjects in both conditions, and they lie more to avoid the lowest payoff than to get the highest payoff. Our findings suggest that the observed patterns are more likely mediated by factors associated with obesity than by short term energy dynamics, and call for a better integration of the psychological, economic and biological drivers of moral behaviour.

Sridhar 2021

Devi Sridhar & Deepti Gurdasani, *Herd immunity by infection is not an option.* science **371** (2021), 230–231. DOI:10.1126/science.abf7921.

Difficult lessons are learned from a largely uncontrolled COVID-19 epidemic in Manaus, Brazil.

This attack rate resulted in a factor of 4.5 excess mortality in 2020 relative to previous years. The infection fatality rate was estimated to be between $0.17\,\%$ and $0.28\,\%$, consistent with the population being predominantly young and at reduced risk of death from COVID-19.

If the basic reproduction number (R0)—that is, the average number of secondary infections resulting from an index case in a fully susceptible population—is 2.5 to 3, as estimated within Manaus, the expected attack rate would be 89 to $94\,\%$ and the HIT is expected to be 60 to $70\,\%$ for a homogeneous population. [...] However, even with an estimated $76\,\%$ of the population being infected, it appears the HIT was not reached.

Anthropologie

Barsbai 2021

Toman Barsbai, Dieter Lukas & Andreas Pondorfer, *Local convergence of behavior across species.* science **371** (2021), 292–295.

s371-0292-Supplement.pdf

Behavior is a way for organisms to respond flexibly to the environmental conditions they encounter. Our own species exhibits large behavioral flexibility and occurs in all terrestrial habitats, sharing these environments with many other species. It remains unclear to what extent a shared environment constrains behavior and whether these constraints apply similarly across species. Here, we show that foraging human populations and nonhuman mammal and bird species that live in a given environment exhibit high levels of similarity in their foraging, reproductive, and social behaviors. Our findings suggest that local conditions may select for similar behaviors in both humans and nonhuman animals.

Hill 2021

Kim Hill & Robert Boyd, *Behavioral convergence in humans and animals.* science **371** (2021), 235–236.

Local ecology combines with culture to produce behavioral variation in hunter-gatherers.

For example, Mathew and Perreault (9) studied the causes of variation among 172 native American groups in western North America. Like Barsbai et al., they found that ecological factors explained a substantial amount of variation, particularly in behaviors related to subsistence and technology. But the variation in subsistence-related behaviors was equally well explained by the linguistic distance between groups, which proved to be an even better explanation than ecological factors for the variation in political organization, religious practice, and kinship organization. Moreover, the effect of cultural history seems to persist for hundreds or even thousands of years.

Datierung

B ARD 2021

Edouard Bard Bard & Timothy J. Heaton Heaton, *On the tuning of plateaus in atmospheric and oceanic ^{14}C records to derive calendar chronologies of deep deep-sea cores and records of ^{14}C marine reservoir age changes.* Climate of the Past (2021), preprint, 1–38. DOI:10.5194/cp-2020-164.

As a an extended n comment on the paper by Sarnthein et al. (2020) 2020), we express , strong reservations about the methodology of the so so-called 14C plateau tuning (PT) technique C used to date marine sediment records and its implications on the determination of 14C marine reservoir age ages (MRA).

The main problems are linked to to: the assumption of constant MRA during 14C-age plateaus plateaus; the lack of consideration of foraminifera abundance changes coupled to bioturbation that can create spurious plateaus in marine sediments sediments; the assumption that plateaus have the same shape shapes and duration durations in atmospheric and oceanic records records; the implication that atmospheric 14C/12C peaked instantaneously from one plateau to the next next; that the 14C plateaus represent C 82 % of the total time spent between 14,000 and 29,000 cal yr BP, whereas during the remaining 18 % of the time, the radiocarbon clock was running almost 5 times too fast; that the sparsity, combined with the level of analytical uncertainties and additional noise noise, in both atmospheric and marine data do not currently allow one to reliably or robustly identify plateaus (should they exist) beyond 15,000 cal yr BP BP; and that the determination and identification of plateaus is reliant upon significant changes in sedimentation rate within the marine sediments which are, a priori, unknown and are not verified with an independent method method.

The concerns we raise are supported and strengthened with carbon cycle box box-model experiments and statistical simulations of pseudo pseudo-atmospheric and pseudo pseudo-marine records, allow allowing ing us to test the ability to identify and tune 14C-age plateaus, in the context of noisy and sparse data.

S ARNTHEIN 2020

Michael Sarnthein & Pieter M. Grootes et al., *Plateaus and jumps in the atmospheric radiocarbon record*, *Potential origin and value as global age markers for glacial-to-deglacial paleoceanography, a synthesis.* Climate of the Past **16** (2020), 2547–2571.

ClimPast16-2547-Supplement.pdf

Changes in the geometry of ocean meridional overturning circulation (MOC) are crucial in controlling past changes of climate and the carbon inventory of the atmosphere. However, the accurate timing and global correlation of short-term glacial-to-deglacial changes of MOC in different ocean basins still present a major challenge. The fine structure of jumps and plateaus in atmospheric and planktic radiocarbon (14C) concentration reflects changes in atmospheric 14C production, ocean–atmosphere 14C exchange, and ocean mixing. Plateau boundaries in the atmospheric 14C record of Lake Suigetsu, now tied to Hulu Cave U/Th model ages instead of optical varve counts, provide a stratigraphic "rung ladder" of up to 30 age tie points from 29 to 10 cal ka for accurate dating of planktic oceanic 14C records. The age differences between contemporary planktic and atmospheric 14C plateaus record the global distribution of 14C reservoir ages for surface waters of the Last Glacial Maximum (LGM) and deglacial Heinrich Stadial 1 (HS-1), as documented in 19 and 20 planktic 14C records, respectively. Elevated and

variable reservoir ages mark both upwelling regions and highlatitude sites covered by sea ice and/or meltwater. 14C ventilation ages of LGM deep waters reveal opposed geometries of Atlantic and Pacific MOC. Like today, Atlantic deep-water formation went along with an estuarine inflow of old abyssal waters from the Southern Ocean up to the northern North Pacific and an outflow of upper deep waters. During early HS-1, 14C ventilation ages suggest a reversed MOC and $\approx$ 1500year flushing of the deep North Pacific up to the South China Sea, when estuarine circulation geometry marked the North Atlantic, gradually starting near 19 ka. High 14C ventilation ages of LGM deep waters reflect a major drawdown of carbon from the atmosphere. The subsequent major deglacial age drop reflects changes in MOC accompanied by massive carbon releases to the atmosphere as recorded in Antarctic ice cores. These new features of MOC and the carbon cycle provide detailed evidence in space and time to test and refine ocean models that, in part because of insufficient spatial model resolution and reference data, still poorly reproduce our data sets.

Michael Sarnthein, Kevin Küssner, Pieter M. Grootes, Blanca Ausin, Timothy Eglinton, Juan Muglia, Raimund Muscheler & Gordon Schlolaut

Jungpaläolithikum

Stannard 2021

Melissa K. Stannard & Michelle C. Langley, *The 40,000-Year-Old Female Figurine of Hohle Fels, Previous Assumptions and New Perspectives.* Cambridge Archaeological Journal **31** (2021), 21–33.

As the earliest image of a human being and the oldest piece of figurative art, the female figurine of Hohle Fels remains a significant discovery for understanding the development of symbolic behaviour in Homo sapiens. Discovered in southwestern Germany in 2008, this mammoth-ivory sculpture was found in several fragments and has always been assumed to be complete, never owning a head. In place of a head, there is instead a small loop that would allow her to be threaded, possibly to be worn as a pendant. Several hypotheses have been put forward as to her original use context, ranging from representing a fertility goddess to a pornographic figure. Yet none of these theses have ever suggested that she once had a head. Here we explore whether the female figurine of Hohle Fels was designed as a two-part piece, with the head made of perishable material culture, possibly woven plant or animal fibres; or that the artefact is a broken and reworked figurine with the head simply never found. By exploring the possibility that this figurine did originally have a second part—a head—we investigate issues surrounding the role of women and children in the Swabian Aurignacian.

Klima

Starr 2021

Aidan Starr et al., *Antarctic icebergs reorganize ocean circulation during Pleistocene glacials.* nature **589** (2021), 236–241.

The dominant feature of large-scale mass transfer in the modern ocean is the Atlantic meridional overturning circulation (AMOC). The geometry and vigour of this circulation influences global climate on various timescales. Palaeoceanographic evidence suggests that during glacial periods of the past 1.5 million years the AMOC had markedly different features from today1; in the Atlantic basin, deep waters of Southern Ocean origin increased in volume while above them the

core of the North Atlantic Deep Water (NADW) shoaled2. An absence of evidence on the origin of this phenomenon means that the sequence of events leading to global glacial conditions remains unclear. Here we present multi-proxy evidence showing that northward shifts in Antarctic iceberg melt in the Indian–Atlantic Southern Ocean (0–50° E) systematically preceded deep-water mass reorganizations by one to two thousand years during Pleistocene-era glaciations. With the aid of iceberg-trajectory model experiments, we demonstrate that such a shift in iceberg trajectories during glacial periods can result in a considerable redistribution of freshwater in the Southern Ocean. We suggest that this, in concert with increased sea-ice cover, enabled positive buoyancy anomalies to escape' into the upper limb of the AMOC, providing a teleconnection between surface Southern Ocean conditions and the formation of NADW. The magnitude and pacing of this mechanism evolved substantially across the mid-Pleistocene transition, and the coeval increase in magnitude of the 'southern escape' and deep circulation perturbations implicate this mechanism as a key feedback in the transition to the '100-kyr world', in which glacial–interglacial cycles occur at roughly 100,000-year periods.

Aidan Starr, Ian R. Hall, Stephen Barker, Thomas Rackow, Xu Zhang, Sidney R. Hemming, H. J. L. van der Lubbe, Gregor Knorr, Melissa A. Berke, Grant R. Bigg, Alejandra Cartagena-Sierra, Francisco J. Jiménez-Espejo, Xun Gong, Jens Gruetzner, Nambiyathodi Lathika, Leah J. LeVay, Rebecca S. Robinson, Martin Ziegler & Expedition Science Part

Kultur

March 2021

Paul Louis March, *Project Holocene*, *The Clayful Phenomenology of Jōmon Flame Pots.* Cambridge Archaeological Journal **31** (2021), 1–19.

As a ceramic artist, I was surprised to find that archaeological research gives little attention to the extraordinary sensorial qualities of Jomon flame pots. To understand why, I consider the challenges of including sensory experience in archaeological method and the problems of leaving it out. Turning to the typological approach to Jomon pottery, I highlight the assumptions it makes about cognition before introducing Material Engagement Theory (MET) as an alternative. A MET-oriented reanalysis of the typological evidence places sensation at the centre of enquiry and removes the need to interpret symbolic, representational content. Through MET, I consider the sensorial qualities of flame pots, not as prehistory but as they appeared recently and unexpectantly during the process of modelling clay into sculptures for a contemporary art project. Flame pots joined conceptually with the explorative activity of clay. A prehistoric/contemporary artefact/modelling system was created and developed itself into a method of monitoring intra-systemic experience—clayful phenomenology. The findings cover five themes: enacted agency, iconicity from indexicality, bending rules/ undermining habits, the choreography of material engagement and the phenomenology of space.

Metallzeiten

Scott 2021

Ashley Scott et al., *Exotic foods reveal contact between South Asia and the Near East during the second millennium BCE.* PNAS **118** (2021), e2014956117.

pnas118-e2014956117-Supplement.pdf

Although the key role of long-distance trade in the transformation of cuisines worldwide has been well-documented since at least the Roman era, the prehistory of the Eurasian food trade is less visible. In order to shed light on the transformation of Eastern Mediterranean cuisines during the Bronze Age and Early Iron Age, we analyzed microremains and proteins preserved in the dental calculus of individuals who lived during the second millennium BCE in the Southern Levant. Our results provide clear evidence for the consumption of expected staple foods, such as cereals (Triticeae), sesame (Sesamum), and dates (Phoenix). We additionally report evidence for the consumption of soybean (Glycine), probable banana (Musa), and turmeric (Curcuma), which pushes back the earliest evidence of these foods in the Mediterranean by centuries (turmeric) or even millennia (soybean). We find that, from the early second millennium onwards, at least some people in the Eastern Mediterranean had access to food from distant locations, including South Asia, and such goods were likely consumed as oils, dried fruits, and spices. These insights force us to rethink the complexity and intensity of Indo-Mediterranean trade during the Bronze Age as well as the degree of globalization in early Eastern Mediterranean cuisine.

Keywords: proteomics | Bronze Age | Eastern Mediterranean | spice trade | early globalization

Ashley Scott, Robert C. Power, Victoria Altmann-Wendling, Michal Artzy, Mario A. S. Martin, Stefanie Eisenmann, Richard Hagan, Domingo C. Salazar-García, Yossi Salmon, Dmitry Yegorov, Ianir Milevski, Israel Finkelstein, Philipp W. Stockhammer & Christina Warinner

Significance: Here we report the identification of staple and exotic food remains in Bronze and Early Iron Age dental calculus from the Southern Levant. The analysis of dietary plant microremains and proteins sheds new light on consumed exotic foods from South and East Asia during the second millennium BCE. We provide the earliest direct evidence in the Mediterranean to date for the consumption of sesame, soybean, probable banana, and turmeric. The recovery and identification of diverse foodstuffs using molecular and microscopic techniques enables a new understanding of the complexity of early trade routes and nascent globalization in the ancient Near East and raises questions about the long-term maintenance and continuity of this trade system into later periods.

Mittelpaläolithikum

Frayer 2020

David W. Frayer, Jakov Radovčić & Davorka Radovčić, *Krapina and the Case for Neandertal Symbolic Behavior.* Current Anthropology **61** (2020), 713–731.

We review four examples of ritual or symbolic behavior from the central European Mousterian site of Krapina in present-day Croatia. These include evidence of ritual cannibalism and secondary burials; a cranium of a Neandertal female with 35 mostly parallel postmortem lines inscribed into the forehead; eight talons and an associated foot bone from three or four different whitetailed eagles, all with signs of manipulation and assembly into a necklace, bracelet, or rattle; and a limestone rock with black inclusions that appears to have been carried onto the site as a curiosity. These occur well before any modern Homo sapiens entered Europe and are evidence that the Krapina Neandertals had ritual and symbolic capacities. Along with Krapina, there is mounting evidence from other earlier and later Neandertal sites of behaviors generally exclusively attributed to modern H. sapiens.

Ostasien

Brumm 2021

Adam Brumm et al., *Oldest cave art found in Sulawesi.* Science Advances **7** (2021), eabd4648. DOI:10.1126/sciadv.abd4648.

Indonesia harbors some of the oldest known surviving cave art. Previously, the earliest dated rock art from this region was a figurative painting of a Sulawesi warty pig (Sus celebensis). This image from Leang Bulu' Sipong 4 in the limestone karsts of Maros-Pangkep, South Sulawesi, was created at least 43,900 years ago (43.9 ka) based on Uranium-series dating. Here, we report the Uranium-series dating of two figurative cave paintings of Sulawesi warty pigs recently discovered in the same karst area. The oldest, with a minimum age of 45.5 ka, is from Leang Tedongnge. The second image, from Leang Balangajia 1, dates to at least 32 ka. To our knowledge, the animal painting from Leang Tedongnge is the earliest known representational work of art in the world. There is no reason to suppose, however, that this early rock art is a unique example in Island Southeast Asia or the wider region.

Adam Brumm, Adhi Agus Oktaviana, Basran Burhan, Budianto Hakim, Rustan Lebe, Jian-xin Zhao, Priyatno Hadi Sulistyarto, Marlon Ririmasse, Shinatria Adhityatama, Iwan Sumantri & Maxime Aubert