



Article

A contemporary archaeology of pandemic

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Abstract

Global crises drastically alter human behavior, rapidly impacting patterns of movement and consumption. A rapid-response analysis of material culture brings new perspective to disasters as they unfold. We present a case study of the coronavirus pandemic in Tromsø, Norway, based on fieldwork from March 2020 to April 2021. Using a methodology rooted in social distancing and through systematic, diachronic, and spatial analysis of trash (e.g., discarded gloves, sanitization products), signage, and barriers, we show how material perspectives improve understanding of relationships between public action and government policy (in this case examined in relation to the Norwegian concept of collective labor, *dugnad*). We demonstrate that the materiality of individual, small-scale innovations and behaviors that typified the pandemic will have the lowest long-term visibility, as they are increasingly replaced or outnumbered by more durable representations generated by centralized state and corporate bodies that suggest close affinity between state directive and local action. We reflect on how the differential durability of material responses to COVID-19 will shape future memories of the crisis.

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Keywords

Contemporary archaeology, materiality, COVID-19, Norway

Introduction

Following the spread of COVID-19 in 2020, global behavior rapidly shifted, with state and local governments encouraging measures to decrease the spread of the virus through social distancing, and new norms of practice manifesting quickly across communities.

The materiality of the crisis was readily apparent. Shortages of food, cleaning supplies, and toilet paper broadcast on social media stoked panic buying and precipitated shortages. Public spaces rapidly changed, as the shutting of schools, cultural institutions, and restaurants drove people into parks, beaches, trails, and homes. Silt settled in waterways and animals ventured onto asphalt. Revised rules for social behavior emerged, with signs, stickers, and barricades working to shape new normal codes of conduct. In many contexts, social distancing became enforceable by law, shuttering businesses and breaking up public gatherings.

Archaeological intervention is generative at these moments. In this article, we demonstrate how local, material, and diachronic analyses of the unexpected generate new perspectives on globally experienced phenomena. Specifically, we examine material patterns of consumption, social distancing, closure, and waste during the COVID-19 pandemic in a northern city in Norway to reveal shifting relationships between public response and government directive. Moving beyond snapshots of empty shelves and documentation of ephemeral moments during the pandemic, material-based methodologies are not only suited for the excavation of past social upheaval, often recorded by archaeologists, but equally viable to mobilize during crises as they occur.

This article is based on fieldwork in Tromsø, Norway, between March 12, 2020, and April 2021 (see Figure 1). Our study begins before the enactment of social distancing measures by the Norwegian government in 2020 and spans three waves of the virus into spring 2021, as the Norwegian vaccination program began in earnest. Using an archaeological approach, we map and analyze visual representations (e.g., signage indicating store closures and social distancing measures) and trash (such as discarded gloves, masks, and sanitization products) across space and over the first year of the crisis. Using a methodology attentive to ethics and rooted in social distancing, we analyze these materials in relation to a discourse of collective work/action, or *dugnad*, evoked by Norwegian government directives when COVID-19 measures were first introduced. We encourage a rapid but reflexive practice to record and interpret the social phenomenon, addressing both the transience and durability of its materials.

Through structured study of the material world, we demonstrate how local innovation and action exist in constantly transforming relation to national and

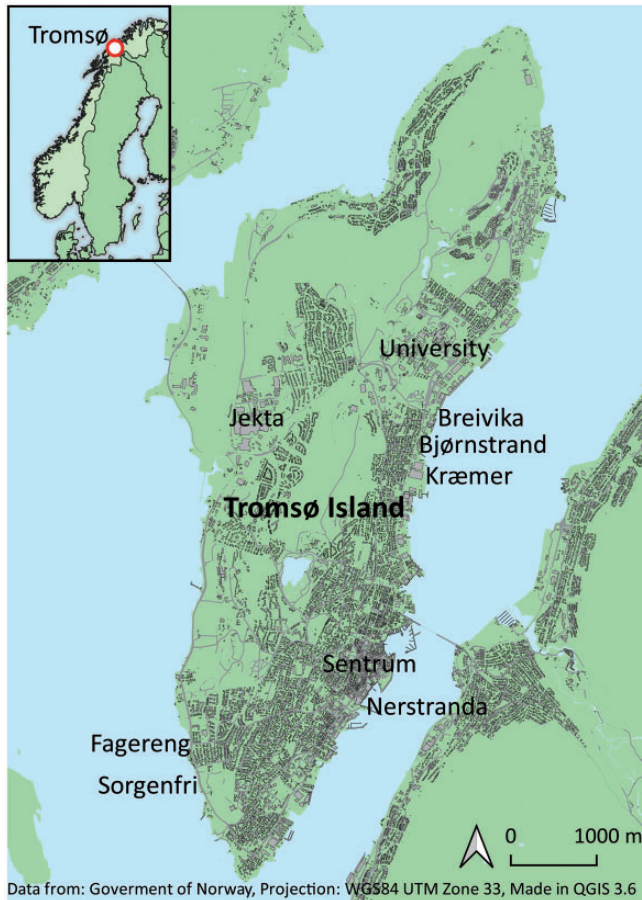


Figure 1. Map of the study area and survey locations in Tromsø, Norway.

corporate directives. Analysis of materials and their distribution across space and time allows us to trace the changing shape of public response to the state call to *dugnad*, a collective effort to overcome the virus. Our results highlight ruptures and convergences between local behavior and national advisories on social distancing. Such intersections of state or corporate policy and individual practice characteristic of the pandemic are rendered invisible without sustained attention to shifting patterns of material culture. Following the height of the global lockdown, increasingly standardized state and corporate representations overshadow and replace localized responses, which were often cast in ephemeral materials. We suggest that these layers will align historical memory of COVID-19 in Norway with government policy, overshadowing the diversity of individual decision-making that took place in dialogue with state directive.

Background

Since the 1970s, a turn towards contemporary materiality has broadened the scope of archaeological inquiry. Behavioral archaeological work proved formative for the emerging fields of contemporary archaeology and material culture studies. Offering a definition of archaeology “simply as the study of relationships between human behavior and material culture,” Reid, Schiffer, and Rathje demonstrated that archaeologists might only be concerned with objects insofar as they tell us something about living people today (Reid et al., 1975: 864). Through now-classic studies on refuse, Rathje demonstrated ruptures between expectations about human behavior, and what careful study of material culture might reveal about consumption and waste (Rathje, 1984; Rathje and Murphy, 2001). A shifting temporal and geographical gaze facilitated the foundation of a robust field (see Harrison and Breithoff, 2017), considering both the spectacular and innocuous manifestations of human behavior through material culture.

Handling the materiality of the contemporary world, archaeologists have worked to elucidate pressing social issues that simultaneously require immense care towards human subjects. Studying crises reveals new perspectives on how humans cope through material interactions, adapted to deal with social and environmental issues ranging from homelessness (Kiddey, 2017; Zimmerman et al., 2010) to migration (De León, 2012, 2015; Hamilakis, 2017), long-term processes of colonization (Magnani and Magnani, 2018), and natural disasters (Bagwell, 2009; Dawdy, 2006, 2016; Yazdi, 2010). While it is possible to draw attention to inequalities or the ramifications of poor state policy using archaeology, scholars have wrestled with the ethics of representing human suffering (see for instance De León, 2015). Thoughtfully enacted, contemporary archaeology may not only reveal unanticipated perspectives on social phenomena, but seek to inform policies and attitudes that impact the handling of catastrophes, ranging from manmade plastic pollution (e.g., Schofield et al., 2020, 2021) to naturally occurring seismic events (Jusseret, 2014).

Considering current events, we situate this article alongside a growing body of anthropological and archaeological literature addressing the materiality of the coronavirus pandemic. Archaeologists quickly responded to COVID-19, critically approaching the impacts of its plastic waste (Schofield et al., 2021), the materiality of the virus as it impacted social inequality (Khatchadourian, 2020), and the ramifications for archaeologists themselves (Olsen, 2021). Initiating a body of work on COVID-19, Stacey Camp reflected on her personal experience and positionality to reveal how archaeological practice helped her process the disruption of the pandemic (Camp, 2020; see also Angelo et al., 2021). Others worked to record and collect the pandemic in innovative ways. For instance, the Viral Archive collated crowd-sourced photos from the public, in a way that was sensitive to users’ locational data, and further discouraged travel specifically to collect photos for the archive (@Viral_Archive). Museum curators were active in their documentation of the crisis through rapid-response collecting—capturing a diversity of perspectives

through oral histories, digital records, and physical objects—but seeking to maximize community safety (Gruda, 2020; see also guidelines by the Science Museum Group, 2020).

Responsively enacted, what do archaeological approaches, rooted in the analysis of materiality and space, tell us about the interplay between government directive and public response during crises? The spread of COVID-19—a globally impactful event that was experienced in many local configurations—is one such disaster that will stand to transform not only archaeological practice, but also the way we communicate and think about the societal relevance of our findings (see also Gamble et al., 2021). We demonstrate how archaeological methodologies are suitable to actively engage the social and political complexities of unexpected, ongoing crises. Such flexible tool kits are ideal to deploy not only in the wake of disasters, but also rapidly as they occur (see also Magnani and Magnani, 2020).

The virus

The first cases of COVID-19, caused by SARS-CoV-2, were recorded in late December 2019, in Wuhan, Hubei Province, China. The first “situation report” released by the World Health Organization (WHO) noted the spread of a respiratory illness of unknown cause. By January 7, 2020, a novel coronavirus was identified, with 282 cases reported by January 20, a majority of which were located in the province of its origin (WHO, 2020b).

The virus spread internationally at an unanticipated rate (see WHO, 2020a for a description of its viability on different surfaces and transmission properties). Outside of China, cases were quickly found in South Korea, Japan, and Thailand. Impacts became pronounced in Europe by the end of February and increasingly visible in the Americas, while the first cases began to appear in sub-Saharan Africa. COVID-19 was declared a pandemic on March 11, 2020, by the World Health Organization.

The origins of COVID-19 and dugnad in Norway

Tromsø, the location of our study, reported Norway’s first case of the virus on February 26. Then, on the same day as the WHO’s announcement on March 11, Helse- og omsorgsdepartementet (the Norwegian Ministry of Health and Care Services) issued its own directive—an *innkalling til dugnad*, “call to *dugnad*” (Ministry of Health and Care, 2020).

Dugnad is a concept that in Norway refers to voluntary, collective effort or labor, often mobilized for schools, sports teams, housing complexes, neighborhoods, and in the case of COVID-19, the nation (Myhre, 2020). The term has connections to the Old Norse *dugnaðr*, a virtue-imbued assistance, and in Norway is associated with earlier centuries of communal (especially agricultural) work (Nilsen et al., 2020). In 2020, the Ministry of Health and Care Services explicitly

outlined the application of a community *dugnad* model to a national cause: “Before the *dugnad* we plan the main tasks. But new tasks always show up along the way, which we only see once we start the job.” As such, the government appeal to *dugnad* conjured an established Norwegian practice of deploying collective labor to achieve a national goal.

The day after the call to action, March 12, the government closed a number of categories of meeting points, including schools, universities, and pubs that do not serve food. Other essential services, such as transportation and healthcare, continued. In the first wave, COVID-19 cases steadily increased from the end of February until the end of March, with over 300 new instances reported a day across the entire country. Infection rates were low by international comparison: by May 12, 2020, while the number of cases had spiked globally to over 4,000,000, with nearly 300,000 deaths (WHO 2020c), there were just over 8,000 cases and 228 deaths in Norway (Norwegian Institute of Public Health, 2021a).

The “Koronaloven,” or Corona Act, established emergency regulations by March 21. The Act provided additional powers to the Norwegian government to modify legislation, keeping the country functioning during the pandemic (Koronaloven, 2020), while later actions provided funding and support for vendors who experienced loss of business.

Meanwhile, the call to *dugnad* actualized established community practice, activating preexisting social norms and values that would take on diverse forms across public and private sectors. It built on existing state and institutional precedents of *dugnad*. Protocols for national *dugnad* solidified with post-Second World War rebuilding efforts, and have since developed in dialogue with a Norwegian welfare state and local organizations supported by volunteer work (Lorentzen and Dugstad, 2011; Sivesind et al., 2002). Transforming to meet new challenges, the 2008 nationwide *dugnad* to eliminate a biological “foreign” agent, the Iberian slug, required the collective effort of home gardeners, private businesses, and public services and agencies, directed by an “action plan” of the Landbruks- og matdepartementet, or Ministry of Agriculture and Food (Ministry of Agriculture and Food, 2008).

Against this historical backdrop, the 2020 virus that entered Norway encountered political and societal infrastructures that were adapted through trial and error to the unfolding situation. New COVID-19 measures and their social evocations evolved over the course of the crisis to structure institutional, corporate, and individual responses. In some cases, these responses mitigated the spread of the infection, while in others they contributed to undermine containment efforts.

Social distancing as a methodology

How can one responsibly conduct research during a pandemic? Our methodology is based on social distancing since we, as researchers, acted not only as observers but as agents within the crisis. Our material focus not only elucidates new

perspectives on human behavior, but provides a strong foundation for analysis at a time when maintaining distance from interlocutors was of utmost importance. Our practice was directly shaped by Norwegian COVID policy and local sensibilities, and constantly reassessed to respect both obligatory and maximum recommended guidelines for social distancing advised by the Norwegian Health Directorate.

Embedded in our work is the assertion that archaeologists must be able to respond quickly but conscientiously to current events. How can scholars balance social responsibility with responsive documentation and analysis? What justification is needed to conduct a study, bringing archaeological perspectives to bear on moments of crisis? Contemporary archaeologists have struggled constructively with representations of death and distress (see again De León, 2015), and developed strong ethical compasses based on care and respect for informants (Kiddey, 2017). Often, these studies not only expose and bear witness to inequality (see for instance Hicks and Mallet, 2019), but also communicate the difficulty of representing social injustice. In many ways COVID presents a unique contemporary archaeological project because of its disruptive, global nature as a health crisis. Yet, it shares in common foundations with previous contemporary archaeological work discussed in the background section above, necessitating responsible data collection and representation.

Launching from these considerations, our field location was preselected by the circumstances; the onset of COVID-19 in March 2020 found the co-authors mid-semester in Tromsø, at UiT The Arctic University of Norway. We acknowledge our privilege as non-essential workers who could shift our offices home during the crisis. The four co-authors live in three different locations across Tromsø Island (see Figure 1): Sentrum (the city center), Bjørnstrand (a mixed, heavily trafficked area between the city center and the university), and Fagereng and Sorgenfri (a southwestern residential area adjacent to the main beaches). The daily routines that emerged following the closure of the University were thus situated in proximity to our homes.

We were attentive to advisories issued by Helsedirektoratet (the Norwegian Directorate of Health) and responsive to changing circumstances in Norway as guidelines were issued by official channels and implemented locally through emerging social norms and expectations of movement and gathering. For instance, in the first wave of the crisis, community control against meeting and actualization of national *dugnad* was far more conservative than the social distancing measures suggested by the state (groups of five or fewer were permitted according to national guidelines, while in practice people generally avoided meeting up with even one friend indoors, instead opting for walks outside). We maintained increased distance from others, including coauthor collaborators. To facilitate remote collaboration in researching and writing the article, we used digital meeting platforms, which also provided a safe means of social contact at a time of increased isolation. Compared to countries that enacted strict shelter-in-place lockdowns, Norway issued decrees that allowed for the free movement of residents—that is the ability to walk outside, and to patronize businesses—within respective regions (see

Ministry of Justice, 2020), and advised parameters for social distancing and hygiene (Helsedirektoratet, 2020). This project would have been possible, though taken an alternate shape, in other national or local contexts.

Data for this study was primarily derived from the daily routines of the authors, including exercise and essential shopping trips. Our methodological approach blends the previous experience of the coauthors, incorporating anthropological fieldwork rooted in materiality and archaeological survey methods. In this way, we were systematically attuned to the shifting materials visible around us, alongside their intersecting links to state policy and human action. Structured observations began the morning of March 12, 2020, the morning before official closures took place, and ran until April 2021. Guided by changes we noticed in our environment, we documented and georeferenced shifts and alterations in signs, supermarket shelves, and refuse. We combined photos and location data in a shared online drive, reviewing images according to place and date, to determine changes over time and across space. To understand the broader traces of the pandemic in the city, seven surveys of litter in the downtown center were conducted between April 8, 2020, and April 16, 2021. Further methodological considerations related to this project—tracing the development and practicalities of our data collection protocols over the course of the pandemic—are published elsewhere (Magnani et al., 2021).

Upheaval and uncertainty

Material absence

With increasing global discourse on stockpiling behaviors and empty store shelves, our initial observations anticipated changes in local consumption of food products. On the morning of March 12, we surveyed grocery stores in downtown Tromsø, following a strengthening national and international response to the virus. Shelves remained stocked with no indication that consumer or retailer behaviors had shifted. Public buildings and stores remained open.

The announcement of social distancing measures and national *dugnad* enacted later on the day of the 12th precipitated a rush on supermarkets as people left work. Institutions including day care centers, universities, recreational facilities (e.g., pools, gyms, bingo halls), hair salons, and non-food establishments (such as clubs or bars) were amongst the businesses ordered closed (Helsedirektoratet, 2020). The same supermarkets, fully stocked in the morning, became crowded with people and depleted of goods by 6PM on the same evening. Combining spatial data from the coauthors allowed us to see variation across the island in initial stockpiling behaviors, which despite weeks of anticipation generated by a worsening global situation only manifested after the government took action. Across the island, patrons bought heavier, bulk items in greater frequency where they could load purchases into vehicles; weightier or voluminous products, like flours and large packs of toilet paper, disappeared faster from markets with large parking lots

in Kræmer and Breivika, slower in Sentrum. A period of uncertainty began with experiences of absence, not only in food products but also governmental and corporate strategies to mitigate the spread of the illness.

Though the island's residents were aware of the global situation before the 12th, they were only prompted to stockpile goods following a state-level announcement. The call to *dugnad* and simultaneous imposition of restrictions on business, gathering, and movement directly prompted the overcrowding of supermarkets in preparation for social isolation as collective anti-infection effort. Indicating state and corporate ill-preparedness, the announcements precipitated panic in the absence of safety measures—such as the signs, hand sanitizing stations, and other material culture later used to encourage social distancing. The earliest phase of the pandemic was thus marked by absence, not only of goods, but also of the behavior-altering and infection-mitigating signs and materials that would come to be issued by the government and store owners.

Uncertain signs

Rapid closure, increasing variation

Following an initial rush on the supermarkets and national announcements on the 12th, comprehensive observation of signage shows how far closures extended beyond the recommendations of the government. Surveying the downtown area the night of the 13th, groups of employees pensively gathered in some stores to decide whether or not to close. Other retailers and food vendors on the island had already shuttered with paper notices displayed in their windows, justifying voluntary closure as an act of solidarity with the national *dugnad*, or simply “due to Corona.” Businesses legally required to shut, such as night clubs and hair salons, generally appeared closed without notice. The government announcement spurred a spike in non-obligatory closures and reactive behaviors, which were variable but far exceeded state health recommendations.

Many signs announcing closure were hastily hand-written (Figure 2(a)), others run off small printers (Figure 2(b)). Some indicated that they would only cease business between the 12th and 26th of March, the first period during which the Norwegian Directorate of Health assessed the virus. In many cases, these signs would remain past the 26th—until the end of the month of April, while the businesses remained shuttered with no updates. Some stores amended their dates of closure with pens on the original fliers, coinciding with new announcements made by the Directorate of Health (Figure 2(c)). Other larger organizations deliberately emphasized their solidarity with the national collective effort, for example in longer-winded text on digital notice boards (Figure 2(d)).

After a wave of shutdowns on the 12th and 13th, additional shops continued to follow suit, either under social pressure to contribute to the *dugnad* or for economic reasons. Companies serving tourists closed down almost immediately; souvenir outlets and tour operators had little revenue with no foreign visitors and

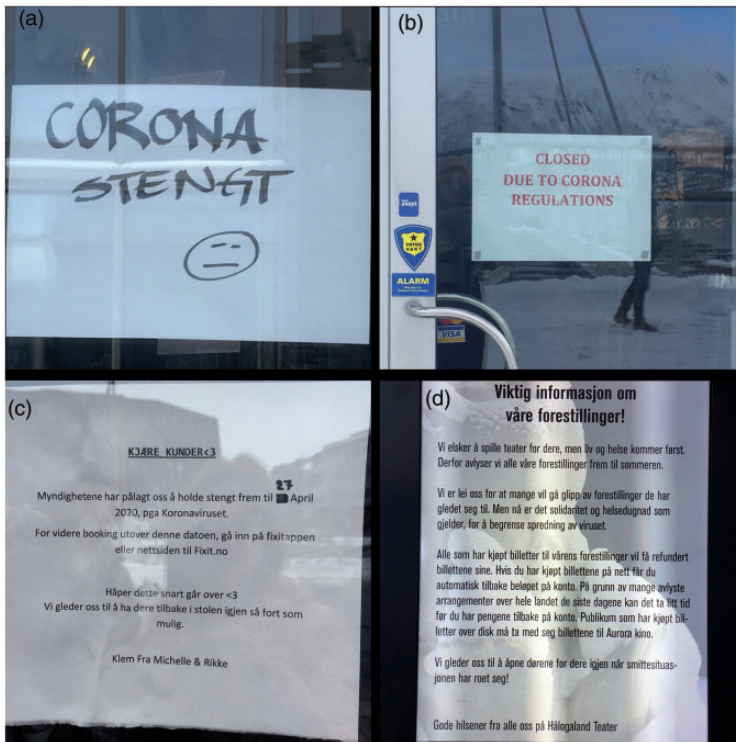


Figure 2. Closure signs from businesses in Sentrum, Tromsø, Norway.

reduced local traffic. Fewer cafes, retailers, and restaurants stayed open and posted guidance for social distancing and infection prevention, while reducing hours and remaining almost entirely empty. In contrast, grocery stores remained open and more regularly frequented as essential businesses.

With the exception of the categories required to shutter by government order, most businesses closed of their own volition. Government compensation covered a portion of COVID-related income loss, making it practical for some stores to close instead of serving a reduced number of customers. However, the compensation was often not always sufficient to cover losses. This suggests that pressure or willingness to join in the *dugnad* also played a role in closures.

Extending social distance

A survey of city signage revealed that businesses, though prompted to action by the call to *dugnad*, went beyond recommendations made by the Directorate of Health using diverse strategies. The Directorate of Health required businesses to keep one meter of distance between patrons, and further indicated that regular

cleaning was necessary (Helsedirektoratet, 2020). While prompted by a government announcement, the evocation of a Norwegian communal effort combined with uncertainty surrounding the novel virus, and encouraged precautionary measures more conservative than legally required.

As activity recentered in homes and shrinking retail space, businesses that remained open devised variable techniques to promote extra distance between patrons. Banks continued only scheduled meetings with customers. Retailers suggested online shopping. Many businesses, including shops and restaurants, reduced their hours substantially (for example to two hours a day during the week). Some retailers opened upon appointment, encouraged order pickup, or limited the quantity of customers allowed inside at one time.

A consistent response was seen by the food service industry, which quickly shifted to offer options for home consumption, despite no official requirement to do so. Buffets were no longer allowed, but restaurants were permitted to stay open if they could ensure one meter's distance between tables or seating and conducted regular cleaning. Still, many locations pivoted entirely to takeout and delivery. Postings on restaurant doors indicated that they were closed for dine-in services, but directed customers to order via phone or delivery application.

Hold avstand (keep distance)

As stores responded to directives, the national *dugnad* began to take on localized forms as supplemental precautions were concurrently implemented. Shifting visual representations further demonstrate how government regulation and directive initially prompted not only variable social distancing measures, but also highly variable practices related to hygiene and movement.

Following a restructuring of space through closures, reduction of hours and decreasing customer contact, the earliest measures to mitigate the virus through social distancing were visible in the island's food distributors. In Sentrum by March 16 and 17, paper fliers placed at eye level advised grocery shoppers to keep distance, encouraged contactless payment using card, and warned against stockpiling supplies. At Kræmer by the 17th of March, signs at the register alerted patrons to keep their distance from one another.

Stores that remained open initially implemented irregular solutions to encourage social distance: hastily wrapped tape cordoning off areas, creatively implemented barriers blocking off seating, or locally printed signs on A4 paper indicating best practices. Haphazard tape on the ground directed patrons to maintain at least one meter's distance from registers, or one meter from one another in checkout lines. In some cases, such as with the state-owned wine distributor, customer numbers were limited at retail locations and tape spacers trailed out of business doors into waiting areas. Some retailers simply cordoned off or even removed seating inside their stores. A few coffee shops deployed a patchwork of bread boxes and signs in multiple languages, physically blocking off seats with red barriers.

By the time the first posters advised to keep social distance and avoid stockpiling, the density of customers at the supermarkets had already greatly reduced and hoarding of supplies had ceased. Sudden government action precipitated stockpiling and an early rush on goods, though there was a lag by private and state-owned businesses to respond. Additional measures took longer to materialize, including posting signage, limiting customer numbers, or creating ad hoc social distancing markers. The national call for collective infection prevention immediately took on diverse and relatively ephemeral forms, while corporate and institutional action was initially invisible materially, but would come to have a longer-term presence.

Reducing contact

The Directorate of Health clearly encouraged social distancing as part of the *dugnad* directive. They stated it would be less likely for the virus to be transmitted via touched objects than through close proximity to others, but also encouraged the frequent cleaning of surfaces (Helsedirektoratet, 2020: Chapter 9). Responding to these government announcements, similar ideas about hygiene and surface contamination were implemented variably across the island.

In parallel to the deployment of the first paper signs guiding patrons to keep distance from one another, pay by card, and resist stockpiling, hand sanitizer stations began to quickly spread across the island's supermarkets. On March 16 and 17 in the city center and Kræmer, hand sanitizer stations were placed at the entrances of large supermarkets. At the supermarket in Fagereng, no hand sanitizer appeared, but a handwashing station at a sink was set up with signage by the 16th.

Soon after, carrying devices like baskets and carts frequently touched by customers became regarded as an infection threat. By March 23, a Jekta shop (Jekta is Tromsø's major mall center) responded by unlocking carts typically released by coins, thus preventing customers from touching money and trolleys excessively. In Sentrum by April 3, the quantity of shopping carts and baskets was sharply reduced, limiting the amount of disinfecting required of employees.

Locally devised solutions retained a degree of informality, expressed through signage. For instance, at one location, loose candy (N. *små-godt*) bins were marked by March 30 with signs telling shoppers to wear gloves or use hand sanitizer before reaching in. Similar candy cases, which have been likened to banned buffets, remained without warning posters at other sites across the island. Another restriction was noted in Jekta on April 16, where the bread slicing machine was "removed due to possibility of infection." In both of these cases, informal, hastily printed signs were taped up.

At least some innocuous innovations meant to reduce contact between customers and potentially infectious objects appeared to spread between stores over time. For instance, at one supermarket, bread products were individually wrapped in plastic and placed in bins. This prevented customers from touching cases, tongs,

and bag dispensers. This innovation first appeared at a supermarket in Jekta on April 1. Weeks later, by April 23 in a downtown grocer, the idea was incompletely implemented. Some bread products were wrapped individually in plastic and put in closed cases. Other rolls were loose and unwrapped in cases, while some bread products were wrapped and placed on tables, mimicking the original pattern seen at Jekta. Irregular implementation of preventative measures suggests that localized actions to mitigate coronavirus transmission were spurred by state guidelines but spread through informal processes.

Assemblages of social distancing

If signage reveals practices that were structured by, but exceeded, national regulations to prevent the spread of the virus, a material survey counterintuitively demonstrates contradictions between national advisories and adaptations of *dugnad*. As the city center became less densely trafficked, reduced commerce continued, and some people took extra precautions to avoid contact with others using personal protective equipment (PPE) and sanitizing products. Following heavy snowmelt on April 7 and 8, we mapped discarded materials from the preceding winter months of the pandemic in Tromsø's downtown streets (see Figure 3).

Amidst a scatter of artifacts from before the pandemic—including drink lids from a closed Burger King, a glow bracelet hinting at Tromsø's vibrant pre-pandemic nightlife (Figure 4(a)), and a hotel key card (Figure 4(b))—a majority of the materials surveyed came from the nearly month-long period of uncertainty and *dugnad*. The presence of takeout receipts indicated shifts toward home consumption. Intact medical gloves were the most commonly discarded objects (29) (Figure 4(c)). These were followed by receipts and shopping lists (9) and smaller quantities of sanitizing products (2) (Figure 4(d)) represented by an empty packet of sanitation wipes and a pump from a large bottle of hand sanitizer.

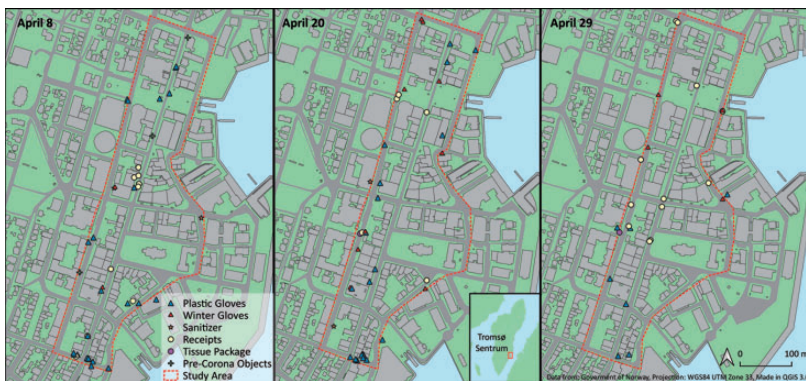


Figure 3. Map of surveys conducted in Tromsø's Sentrum on April 8, April 20, and April 29, 2020.



Figure 4. Discarded trash from surveys in Tromsø's Sentrum (see text for detailed description).

This material discard reflected changing behaviors observed inside businesses: shoppers increasingly donned PPE, while some but not all employees in shops began to wear gloves. Some customers were seen wearing plastic bags on their hands, perhaps due to the prohibitive cost of PPE. The disinfectant littered outside matched the scent of indoor spaces; entire stores smelled of sanitizing products,

and every visible surface appeared to be in the process of cleaning—from benches to handrails, shopping carts, and conveyor belts.

At least two small downtown supermarkets distributed gloves, instructing customers to use them while shopping or at least when handling fruit. Improperly worn gloves, according to the Norwegian Institute of Public Health (FHI) (2020), increase potential for disease transmission, as they may provide a false sense of security, reducing hygienic practices like handwashing. The Directorate further suggested that distributing gloves from a box may increase the likelihood of touching contaminated surfaces, in addition to raising environmental concerns.

The resulting street litter indexed an unexpected response to state action. Counterintuitively, while the government explicitly advised against the use of gloves, their consumption and discard became ubiquitous following state announcements calling for social distancing and infection control. Our survey attests to the frequency and role of PPE, not only in the reduction of individual uncertainty, but as an object marking participation in the collective effort. Despite warnings and evidence to the contrary, gloves appeared to reassure customers of safety, and give the impression of a contribution to the *dugnad*.

Routinization and reopening

On April 6, 2020, the government announced that the virus was under control in Norway enough to allow a gradual reopening of some institutions. Cautious statements of a successful *dugnad* resonated across society along with growing optimism and an easing of pandemic measures. Preschool would resume on April 20, followed by additional school and business openings on the 27th of April. Only certain establishments, including bars that served no food, clubs, gyms, and other places of mass gathering, would remain closed (Ministry of Health and Care Services, 2020).

Retailers and businesses that were never required to close reacted immediately. By April 10, two bars reopened, projecting music into the street. On April 15, call to enter signs disappeared from another storefront and a shuttered local cafe reopened. Anticipating quickly changing circumstances, businesses began to post schedules for only one week at a time (e.g., week 17 or April 14–19). By the week of April 20, following the first round of school reopenings, signs indicating closure were pulled off of doors with greater frequency. By Friday the 24th, some smaller supermarkets removed signs cautioning social distancing. The reopenings fostered a premature sense that the pandemic was ending, made possible by the collective effort against infection spread.

Ephemeral materials

A second survey of discard was conducted on the afternoon of April 20, coinciding with the reopening day of preschools and the beginning of Tromsø's spring clean-up (see Figure 3). Norway is known for its clean public spaces; during spring and

summer months, street cleaning is frequent. Previously documented gloves and trash along pedestrian walkways were swept up by street cleaners that morning. Concrete barriers and guardrails obstructed some gloves and receipts from a first round of coarse sweeping, which teams of men with brooms cleaned up later.

The remaining materials started to break down from pedestrian and vehicular traffic into the environment. Against a backdrop of lost winter gloves (10) (Figure 4(e)), receipts (5), and other small pieces of trash including an empty hand sanitizer bottle (Figure 4(f)), medical gloves (22) (Figure 4(g)) remained the most common materials deposited throughout the city center. They pooled in water and were run over and stepped on, fragmenting and becoming nearly unrecognizable (Figure 4(h)). A smaller quantity of gloves was deposited recently, hinting at the continued use of PPE.

As businesses reopened, gloves continued to disintegrate on the pavement and mix with gravel. Newspapers from March 12 littered the interior of the movie theater and pens and paper remained untouched from the same date in the library, visible through ground-level windows. Enduring longer than most ephemeral objects observed in our study, the newspapers inside the theatre recalled the precise day Norway closed. Stable through the course of the pandemic until the public spaces opened again, these objects were equally transient; many were quickly moved or removed following the reopening of the buildings.

Material lag of durable signs

If the paper signs and plastic gloves that typified innovative local responses to government directives will ultimately leave little trace across the city, what material markers might endure? In Tromsø, the most durable signs of the pandemic arrived late to the first wave, just as state-enacted restrictions were anticipated to loosen. State-issued signs replaced and came to outnumber ad hoc hand-written or printed posters already by the end of the first wave.

Quickly issued signs were updated, or replaced over time with more elaborate posters generated by corporate headquarters and the Directorate of Health. For instance, pharmacy signs went through at least two iterations in the city center. By April 4, professional signs replaced locally printed posters present through the onset and height of the pandemic. On the doors, fliers designed by the pharmacy chain mixed with posters issued by the Directorate of Health. A similar pattern was seen at Jekta; March closures marked by homemade, white laminated paper were replaced with more elaborately designed, permanent announcements through April.

Unofficial markers that encouraged social distancing—construction tape, paper signs, or boxes—became prevalent within two weeks of the first national announcement. Standardized materials to structure space took longer to design, order, and implement. Permanent floor decals, which alerted patrons to hold their distance from one another, appeared in chains and shopping centers that remained open for the duration of the pandemic. As an example, increasing standardization could be seen at a Jekta hardware store. We first recorded caution tape placed at

one-meter intervals at the cash registers on April 6. By April 28, with the exception of one remnant strip of the old tape, most had been pulled up and replaced with official floor decals issued by the enterprise (Figure 5(a)).

A lag in durable markers was witnessed across the island's retailers. At the Kræmer supermarket, a single floor decal appeared by March 23. By April 16, near the end of the first lockdown and reopening of nursery schools, official floor stickers became visible in Jekta (Figure 5(b)). On April 23, chain-specific floor stickers, spaced one meter apart, marked distances to be held in lines at unopened deli counters and registers (Figure 5(c)). By April 24th, additional floor stickers had been distributed to major retailers in Nerstrandra (Figure 5(d)), a smaller shopping center in Sentrum.

In addition to semi-permanent floor decals, new symbols spread late. In early April, rainbows of hope began to appear in great quantity throughout the city. Plastered and painted on the glass of public buildings with the words “alt blir bra” (all will be well), and in the windows of private residences, rainbows drawn by



Figure 5. Stickers structuring social distancing visible in Tromsø's retailers.

children home from school reflected the broader, international spread of iconography during the pandemic. By April 23, days before most businesses reopened, employees at a Sentrum supermarket were wearing matching T-shirts encouraging people to hold their distance. These were likely ordered at the peak of the first wave, but only appeared after schools and businesses began to reopen, joining an array of the pandemic's lagging materials.

The materiality of first wave reopening

Following a first wave reopening on April 29, we conducted a survey of the city center (see Figure 3). After the melting of snow in most locations, half as many objects were logged (24), indicating sustained spring cleanup. Beer bottles and hard alcohol containers stood right side up, indicating a recent increase in activity as the spring weather improved.

We recorded an uptick in receipts (12), which reflected growth in the quantity and diversity of services being performed. A receipt for a birthday card hinted at increased sociality, while invoices from dentists and medical offices signified a return of patients to receive non-essential medical work. Simultaneously, there was a precipitous reduction in medical gloves. From a peak of 29 on April 8, seven gloves remained. With the exception of a minority of recently discarded gloves, the most ubiquitous remnants of the pandemic in Tromsø were restricted to increasingly peripheral zones of the city. A few of these gloves were previously recorded during the April 20 survey. Residual gloves were accidental survivals, located in tertiary driveways, uncleaned sections of street, and behind concrete barriers that marked unpaved parking lots.

Transitions

Through May 2020 the authors continued observations around the city. At the time, it was unknown whether or how future waves of the pandemic would impact the country. Documentation of posters in store vitrines revealed shifting behavioral patterns. After the first reopening in April, hotels in downtown Tromsø remained closed in early May, and some restaurants announced their opening with limited occupancy—for instance, 50 guests held at least one meter apart. Salons that reopened in May emphasized their safety through new posters, and encouraged patrons to wash their hands, avoid phone use (the phone was conceived of as a vector of infection), and to keep distance. At some locations, patrons were instructed to wait outside until called in. As restrictions loosened, other businesses continued to limit the amount of customers in a location at once; for instance, some banks restricted their clients to three in the building at a time, and further asked them to hold distance from one another and wash their hands.

Commerce and travel began to regain normalcy for a brief window over the summer, while background measures encouraging social distancing remained in place. As infection rates decreased abroad, travel advisories became less strict on

June 15, then again a month later in July, when it became possible to travel across most of the European Union. Borders and hotels opened, while floor stickers, reduced capacity seating, and hand sanitizer pumps remained normalized. With these precautions and mandatory mask use during air travel, movement increased within the country and internationally.

National restrictions tightened by early August, and by August 15 advisories against travel to all but a few countries with low infection rates were put back in place. National regulations dictated that alcohol could no longer be served after midnight, shuttering bars early across the country. Despite the use of masks on planes and internationally by other states, the Norwegian FHI actively discouraged the use of face masks through most of the summer, suggesting they were ineffective. By the middle of August, a coronavirus resurgence in Oslo prompted a recommendation for mask use in some contexts around the city; local authorities in Tromsø also recommended mask use in cases when an individual was moving during illness, in quarantine, or in tight quarters at work. While caseloads increased in the south, a relative normalcy remained in Tromsø until the end of August. Simultaneously, the first cracks in *dugnad* began to visibly manifest by the end of the summer. The Tromsø travel authority issued fliers threatening fines to fare evaders, who were cast as taking advantage of the transportation system during a time of crisis.

Second wave materiality

Following a quiet summer, Norway's second wave of COVID-19 gained momentum by October and early November 2020, with over 500 illnesses a day regularly registered across the country (Norwegian Institute of Public Health, 2021 b). Responding to increasing cases across the European Union, new rounds of state-level restrictions extended border closures from September 24 and limited the density of public and private gathering. On October 9 in Tromsø, it became suggested by local authorities to register contact information at restaurants, and mandatory to register oneself in businesses serving alcohol by the 12th. Over the course of the second wave, we again documented innovation and new material culture intended to mitigate the transmission of the virus. However, if the first phase of the pandemic was typified by over-compliance with state regulations, the second comprised far fewer attempts to meet non-mandatory advice, lower levels of innovation and variability, and no visible attempts to exceed state recommendations.

A smaller set of materials—simultaneously more standardized and less extensive—arrived in anticipation of and through the second wave. As older cordons of construction tape visibly aged, freshly applied floor stickers spaced approximately one meter apart were added to buses by September 29. On October 7, we recorded a novel type of sign usage in Tromsø: at Jekta, the island's busiest shopping center, stickers on automatic doors encouraged the directionality of foot traffic, guiding

the flow of patrons through specified entrances and exits. New floor stickers were placed in other supermarkets by October 1.

In parallel to the novel materials that spread across the city, on October 17 we surveyed the downtown area to see how shifting regulations manifested in refuse (see Figure 6). Following survey paths established during the first wave, we registered only two masks (Figures 7(a) and (b)) and two plastic gloves (Figures 7(c) and (d)). This mask was the first recorded during our systematic surveys; until then, we lacked a category in our GPS logging app to document the artifact type. Our first survey from the second wave suggests the waning effect of the pandemic and a declining *dugnad*, with few people apparently following the mask recommendation or donning gloves for a sense of security. New national restrictions, to take place on October 28, limited private gatherings to five people and suggested mask use in areas with high infection rates, amongst other measures (Office of the Prime Minister, 2020). Through the end of October in businesses the authors visited, mask use appeared patchy, with individual companies, employees, or groups of employees taking responsibility for mask use.

By November 5, the second wave of the pandemic swept across Norway, alongside a new batch of state and local regulations. The nation's residents were asked to remain home and avoid others. Social distancing recommendations were extended from one to two meters in certain contexts (e.g., indoor sports, or when in proximity to those at risk of serious complication from COVID). In Tromsø, the municipal government issued sweeping recommendations regarding mask use on

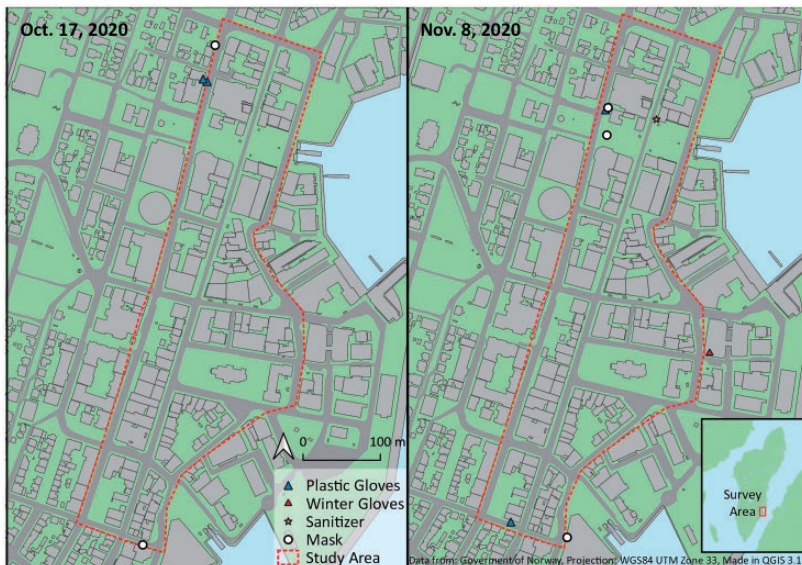


Figure 6. Map of surveys conducted in Tromsø's Sentrum on October 17, and November 8, 2020, during Norway's second wave of infections.

public transportation and guest registration at restaurants. Locally, businesses remained open, and QR codes for guest registration appeared in restaurants on November 4. Masks began to overflow from garbage cans in highly trafficked areas, like bus stops, highlighting the city's poor preparedness for the shift in practice. We witnessed no business closures associated with the layering restrictions, nor an active addition of signs to storefronts across the city.

Again, we conducted a survey of materials following the implementation of new national and local restrictions across the city. Recommendations for mask use did not result in appreciable mask discard; the limited PPE litter mingled with evidence of more recent social holidays (see Figure 6). On November 8, four days after the new recommendations went into place, our survey did not reveal much more waste than in late October: we found only another two masks (Figure 8(a)), two gloves (Figure 8(b)), and one sanitizing product (Figure 8(c)), mixed amongst evidence of Halloween festivities like fake vampire teeth (Figure 8(d)). In the weeks after guidelines became stricter, we noticed another set of smaller-scale transformations across the city. In one large chain store on November 10 in Jekta, we recorded a sign reflecting the new distance recommendations, asking patrons to keep two meters away from others. Only a trickle of new materials was witnessed through the end of the month; on November 19, we noted masks being sold in bulk in supermarkets, and a high-tech hand sanitizing station on November 25, which dispensed sanitizer while bathing hands in ultraviolet light.

Across the second wave, the implementation of novel measures and innovation to mitigate the spread of the virus was more limited and less pronounced.



Figure 7. Materials recorded during the survey conducted on October 17, 2020.

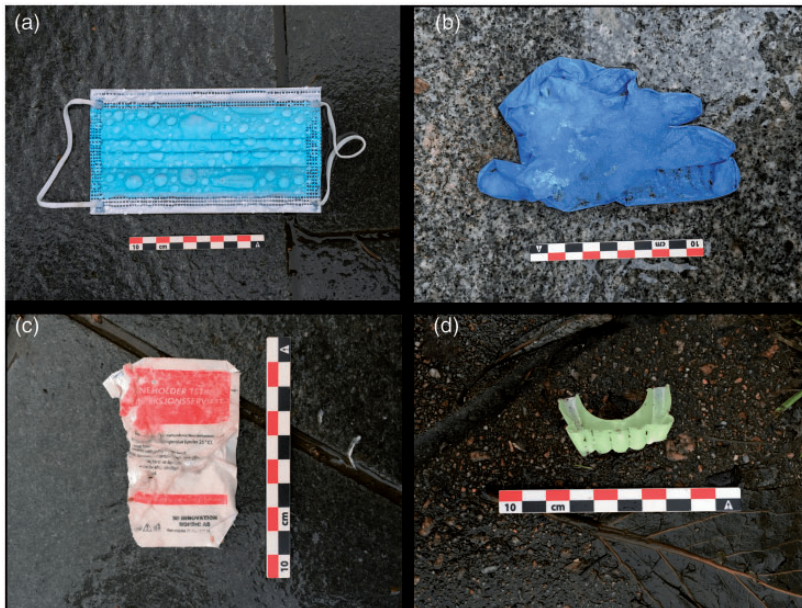


Figure 8. Materials recorded during the survey conducted on November 8, 2020.

By December, caseloads declined somewhat and restrictions began to loosen. On the first of the month, recommendations to use face masks when taking public transport were removed in Tromsø. A week later, a new mobile testing center opened in the center of the city. Similar to the material lag seen after the first wave, public artistic representations became visible, and some statues around the city center became masked. New measures were implemented on January 4 to mitigate the spread of cases anticipated from Christmas and New Year socializing. Still, cases would again rise by the second week of January to exceed the December peak. Some businesses never reopened following regular holiday closures. One restaurant downtown remained shuttered well into the spring, its tables complete with Christmas place settings. Another store that sold souvenirs to tourists remained closed with a Christmas-themed notice.

Across this time period, we noted transformations in mask use that reflected a shift away from national *dugnad* to place-specific sensibilities. While in dialogue with state recommendations, the use of PPE oscillated with changes in local infection rates. During periods of infection uptick in Tromsø, broadcast online and through the news, mask use on buses increased despite retaining the same non-obligatory status. Likewise, when infection numbers decreased to near-zero lows, masks again became sparse on public transport.

Third wave variants

Though the severity of the pandemic declined by mid-January across Norway, case numbers remained higher than the initial 2020 outbreak. Undoubtedly, there was an elevated risk of illness associated with later waves of the pandemic, with cases in the third wave breaking 1,000 per day across the country. However, observation of third wave materials reveals frustration and minimal fulfillment of regulations, rather than an over-compliance associated with the *dugnad* called one year earlier in March 2020, or the waning innovation of the second wave. If the first wave was typified by over-compliance manifesting in business closures, signs of social solidarity, and innovation, the third wave of the pandemic was characterized by a shift to compliance and routinization.

As a third wave loomed, the vaccination rollout began slowly in Norway. Vaccination registration opened on January 15, and by January 29 it was available for individuals between 75 and 84 years old. On the same day that vaccines began for the elderly, the British variant was found in Tromsø, while nationally a new COVID stimulus package was announced to support the unemployed. Despite concern associated with spreading variants amidst the start of mass inoculation, cases remained relatively low (compared to the second wave peak) through most of February.

By the end of February, cases began to spike rapidly, reaching a record high of over 1,000 registered cases in March 2021. As an awareness of mutated COVID variants increased in the north, masks again became recommended on buses and in enclosed areas like stores, where individuals could not social distance. On March 11, we recorded signs on the city bus system indicating that mask use had become mandatory. From the 20th of March, new social distancing guidelines were enacted in Tromsø. It was recommended to use masks in close proximity to others, and to test oneself when arriving from regions with a high number of cases.

We conducted a follow-up survey of the city center on March 24, following the announcement of stricter regulations (see Figure 9). As we carried out the survey, Tromsø residents flocked to bars in anticipation of the new wave of closures. For the first time, the quantity of discarded masks appeared to balloon across the city. While the refuse of the first wave was typified by gloves, our third wave survey revealed a drop in glove use and a spike in masks. Five gloves and 29 masks were observed across the center of the city. A majority of the masks were single-use surgical (Figures 10(a) to (c)), while six were permanent (Figures 10(d)). Two variables most likely contributed to a higher proportion of surgical masks: first, one is less likely to drop a permanent mask because it is intended to be curated for a longer period, and is not carried in multiples. Second, the material discard hints at a low level of habitual mask use, marked by the temporary use of disposable surgical masks during periods of regulation in a region otherwise fortunate to have few serious outbreaks. Gloves were largely fragmentary, indicating they likely were likely deposited during earlier waves (Figures 10(e) and (f)).

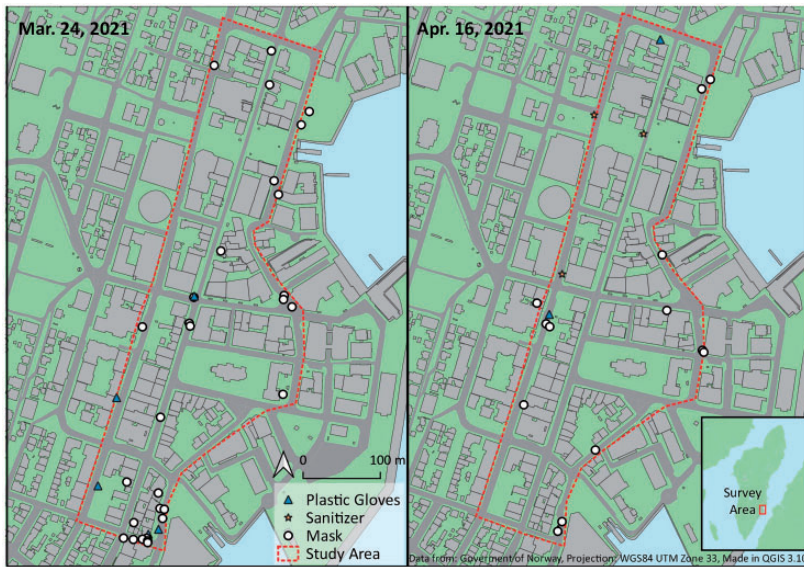


Figure 9. Map of surveys conducted in Tromsø's Sentrum on March 24 and April 16, 2021, during Norway's third wave of infections.

The day after our material survey, new signage emerged alongside a heightening third wave and fresh mandates. Businesses selling alcohol but no food closed, following national requirements to remain in effect until after Easter. In Nerstranda shopping center, entrances were marked with standardized signs indicating the number of patrons permitted at one time. New supermarket posters downtown appeared like normal advertisements—a large, low-quality print, announcing the chain's cleaning regimen, as well as a chart of the busyness of the store so that patrons could plan the least crowded times to shop. Establishments that remained open—that is, all those not legally required to close—retained materials from previous waves, including hand sanitizer, QR code registration, and FHI posters encouraging patrons to keep their distance from one another and practice good hygiene.

Following mandatory closures in the preceding days, on March 27 we conducted a systematic survey of the signage downtown to reveal responses to the updated regulations. Signs limiting the number of customers allowed in shops were now ubiquitous and pointed to an increasing standardization and routinization of practice. This time, chains and professional organizations were prepared: they printed signs with blanks, to be widely distributed across stores, and filled in according to a location's size. This facilitated quick distribution across national retailers and local consortiums. New professional association signs, including those by the Norwegian Hospitality Association (NHO Reiseliv) and an association of barbers and wellness professionals (NFVB), reached prominence in half a dozen



Figure 10. Materials recorded during the survey on March 24, 2021.

businesses. The posters signaled the standardization of cleaning routines and best practices to minimize the risk of transmission. As pub doors locked, new stickers began to appear in the businesses that remained open, this time on windows. Tromsø Sentrum printed new circular stickers with a masked cartoon face encouraging face coverings. A shift from floor to eye-level stickers corresponded with the encouragement of mask use. Posters and stickers now calling for masks mingled with a mixture of FHI signs maintained through the first wave of the pandemic.

Juxtaposed with the first wave, which witnessed rapid business closure and high variability of signs suggesting broader social solidarity, material culture from the third wave was at once increasingly centralized and less specific. A new category of signs merely indicated that individuals entering the premises should respect the current regulations, without saying explicitly what these rules were. For example, posters outside a supermarket in the city center indicated that people should follow directions implemented nationally and at the municipal level. At Nerstranda, patrons were simply directed to follow the authority's recommendations for

mask use. A lack of specificity implies that the production and distribution of signs had become somewhat of a routinized nuisance, and that they would no longer be regularly updated. Simultaneously, these new signs conveyed an expectation that individual patrons know the frequently changing rules and advisories.

Compared to earlier closures that evoked solidarity with a national *dugnad*, a shift in language on signs from the third wave was stark: sign makers expressed some humor, but mainly frustration with forced shutterings. One bar simply posted a tongue-in-cheek flyer stating they would reopen when Erna, the prime minister, said they could. Many others demonstrated that the initial wave of *dugnad* felt nationally had been replaced by frustration with generalized regulations. For instance, one bar announced, “We are unfortunately closed until further notice due to a high infection rate in other parts of the country and therefore we have been affected by the national alcohol stop. We look forward to opening again when it is possible. In the meantime keep safe and take care of each other, we miss you!” At another bar, a transformation in language was clear across waves. By the third COVID spike, closure became “unfortunate,” and necessary due to “regulations,” rather than *dugnad* solidarity. Reopening dates were penned as hopeful, but uncertain. Many other businesses locked their doors and stopped serving with neither pomp nor indication they had closed or anticipated reopening.

Out of the crisis together

On April 10, 2021, the national government released a plan for a gradual opening, titled “Out of the Crisis Together.” The Office of the Prime Minister stated, “Data, not dates, decide the pace of the reopening process.” In the days following the announcement, and as cases dropped precipitously, we conducted our final survey of signage in the city center on April 15, and an inventory of discarded materials on April 16. Though a majority of signs and material culture were quickly removed from store doors and vitrines, our final data collection revealed not only a layering of materials, but frustration, and the cumulative impact of the pandemic over more than a year in northern Norway.

By April 15, though a majority of third wave signs had already been removed, others persisted through loosening regulations. While some pubs remained unmarked and simply closed, others had updated their closure dates from April 13 to the 16th, by hand and in marker. One restaurant’s welcome poster exuded a heightened frustration with both regulations *and* customers. Patrons should not spit or yell, and they must use good hygiene. “The rules,” they stated, “are not under discussion, regardless of how idiotic you think they or the waiter are.” Individual store signs limiting numbers of customers had been removed in some cases, but remained posted at certain larger national chains, including particular pharmacies and convenience stores.

FHI signs, present from the earliest stretches of the first wave of the pandemic, were now layered with updated posters issued by the same authority encouraging mask use. Despite a layering of health recommendations, there was little care

shown in updating signs from periods of stricter rules once those rules had expired. For instance, on public transport—including buses and ferries—signs announced mandatory mask use, though these recommendations had since ended. Still, very few travelers donned masks, signaling an awareness of regulations beyond what was posted. Responsibility to conform to advisories, no longer accurately reflected in announcements, thus became shouldered to a greater extent by individuals.

Our final observations revealed artifacts from all three waves of closures. A ground-based survey on April 16, 2021, showed that material culture associated with the pandemic had declined but not dissipated (see Figure 9). We found one permanent mask (Figure 11(a)), which appeared with the name of a local restaurant. Three sanitizing products (Figure 11(b)), three gloves, and 13 disposable masks were recorded. While some gloves and masks were relatively fresh and intact (Figures 11(c)

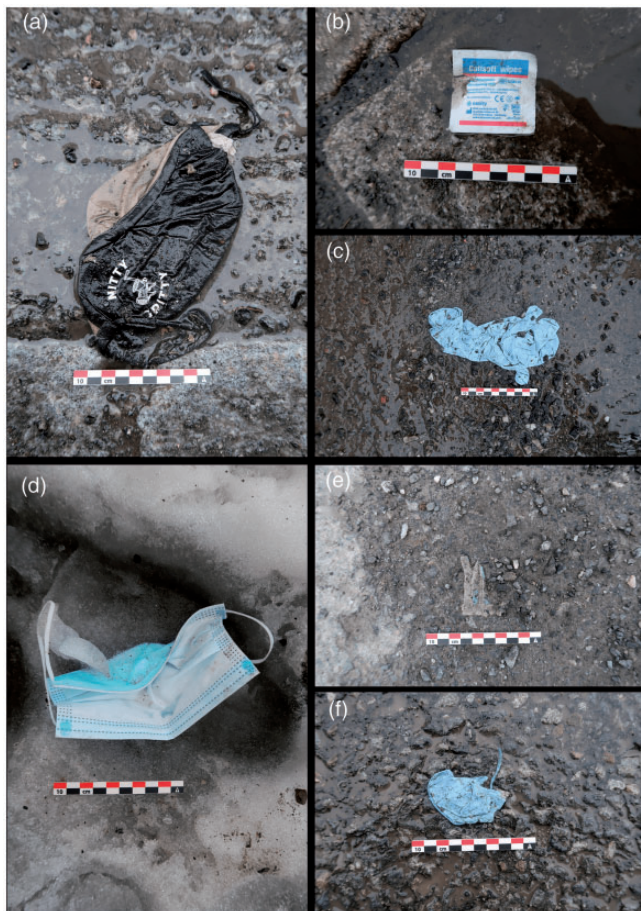


Figure 11. Materials recorded during the survey conducted on April 16, 2021.

and 11(d)), others had degraded significantly (Figures 11(e) and (f)). Signs posted behind unwashed windows attested to three instances of closure. Some businesses remained shut from March 2020, others remained locked from winter 2020/2021, and others had yet to reopen from the most recent round of mandatory shuttering. Several businesses appeared permanently closed and their locations for lease, including a fur seller, a home goods store, and multiple restaurants.

The material surveys conducted as vaccination was underway suggested that the initial *dugnad* operationalized at a state level had thinned but lingered like the pandemic discard. In the process, individuals and businesses negotiated a balance between response to sweeping national measures, and local conditions and sensibilities.

Archaeological perspectives on the pandemic

Material-based methodologies elucidate broader political infrastructures, but also draw attention to otherwise ephemeral variation that broadens an understanding of how state legislation intersects with local responses to crisis. In some cases, Tromsø residents far exceeded official health and distancing guidelines as they adapted daily routines to conform to norms of responsible citizenship reinforced by friends, neighbors, and the national call. In cases of guidelines implemented late in the *dugnad*, or not matching social expectations of hygienic practice (i.e., glove use), behavior contradicted state recommendations. Yet, all actions appeared prompted by government announcements. We circle back to Rathje's scholarship, which demonstrates the potential of material culture studies to upset assumptions about the relationships between human behavior and waste (Rathje, 1977; Rathje and Murphy, 2001). Expanding these perspectives, an archaeological approach to the pandemic in Tromsø reveals disconnects between state action, local implementation, and aggregate traces of individual response.

State announcements were the greatest predictor of behavioral shifts in Tromsø. Still, through attention to material changes, our study indicates where and when these transformations deviated from recommendations and expectations. For instance, while action was only prompted after a call to *dugnad* by the national government, many businesses closed beyond recommendations. Those that remained open far exceeded guidelines for social distancing advised by the Norwegian Directorate of Health. These deviations manifested most visibly through a range of ephemeral material signs, quickly taken down or modified according to changing social affect, itself responsive to state directive.

Ultimately, while advisories were made by the government, responsibility fell on business owners and individuals to implement solutions. In some cases, consistent strategies were employed across spaces that remained open for commerce. This was seen, for example, through the social distancing notices that encouraged patrons to keep their distance from one another. In other cases, a lack of specific guidelines related to virus transmission through direct contact precipitated variable actions, enacted unevenly and irregularly across the island. This was encapsulated, for

example, by the flexible strategies of food distributors to reduce the frequent handling of objects, ranging from serving tongs to shopping baskets.

While the implementation of social distancing and hygiene were consistent but sometimes variable, other emergent behaviors directly contradicted best practices advised by the Directorate of Health. The use of gloves was discouraged for health and environmental reasons, yet they were ubiquitously used by individuals and businesses throughout the city. These materials provided comfort and a feeling of security, though potentially aided in the transmission of pathogens. Similarly, other measures that occurred in parallel but less visibly than the adoption of PPE—for instance the individual wrapping of food products—reflect an uptick in plastic waste that will come to typify the crisis beyond the realm of our reported survey paths (see again Schofield et al., 2021).

Material culture central to understanding local human behavior during the pandemic was most transient. Signs indicating store actions were highly responsive to both state policies and local behaviors throughout the crisis. These posters were quickly taken down and presumably disposed of upon reopening. Similarly, the most pervasive behaviors running contrary to medical advisories were marked by the most ephemeral materials. Gloves and masks quickly broke down into the environment or were cleaned up (rendering them out of immediate view but still present), leaving material culture that manifested late (e.g., official posters) as the most visible markers of COVID-19 in Tromsø. Rather than things making “history slow” (Olsen, 2013: 185), the ephemerality of early pandemic material helped speed the shift from solidarity to compliance, from *dugnad* to mandate.

The assemblages of COVID-19 contribute to an extreme form of accelerated archaeology, typified by the rapid transformation of material culture (Edensor, 2005; Farstadvoll, 2019; Stallabrass, 1996). The preservational qualities and lingering of particular materials after the pandemic will shape how the event is remembered in the future. As Norway’s spring cleaning swept away personal protective equipment and temporary fliers were pulled down over the course of a year, few spaces retain variable markers of the pandemic. Two months after the first wave, shopping carts again required a coin release, baskets had increased in quantity, and employee *keep distance* shirts had been replaced. Temporary posters indicating closure were less durable on the landscape than government-issued signs encouraging social distancing, contactless payment, and hand washing. Many of these behaviors quickly dissipated, leaving a skeleton of signage across the island, a shrinking population of PPE, and increasing numbers of posters from business headquarters and the Directorate of Health. A year after the second and third waves, shuttered businesses attested to the aggregate toll of the pandemic. Memory and commemoration of the coronavirus will be weighted by the ephemerality of these assemblages; without their salvage (for a working definition of salvage archaeology see Darvill, 2008) and analysis, we risk flattening the complexity of diverse pandemic practices.

Conclusion

Archaeologists are well-positioned to both document and interpret short-term and ephemeral events, recording and making visible behavioral patterns and innovation through the analysis of space and material. In moving beyond snapshots of crisis, this lens also reveals behaviors that transcend state-issued orders. Focusing on the broadest sweeping actions—the most visible government and corporate regulations—would overshadow substantial variation in human responses to crisis. Our work records ephemeral characteristics of the pandemic, revealing unexpected qualities of its most durable markers. At the same time, it provides a springboard to consider the persistence and breakdown of pandemic materials in the environment moving forward. While many of the objects reported in this text moved out of immediate sight throughout the course of our study, and others were likely incinerated as trash, many necessarily moved into secondary and tertiary contexts ripe for future excavation and analysis.

Through this article, we present a flexible methodology to confront unexpected events (see also Magnani et al., 2021), contributing to broader archaeological reflections on the pandemic as they relate to human patterns of coping (see again Angelo et al., 2021; Camp, 2020), and intersections with state policy (Schofield et al., 2021). Considering changing relationships between people, things, and spaces, and building on archaeological approaches to present-day material culture, we stress the adaptability of a framework that embraces social distancing, and a field site that was predetermined by our location when the pandemic emerged. We stress a research practice adaptable to different political infrastructures—whether confined to home isolation or allowed free movement around cities at new social distances.

How will experiences of the pandemic be shared, and differ in their resonance across space and through time? What would a broader study reveal about issues of social inequality, or political geography? The observations and analyses presented here, while linked to global networks and phenomena, were based on a case study from Arctic Norway. Our actions were structured by the political infrastructures and preservational contexts of this particular locality. For instance, in Norway we were permitted relatively free movement within our place of residence, while heavy snow cover allowed for the accumulation of pandemic materials over the spring months. Norway's cleaning culture removed many of these traces within weeks of the spring melt. Adopted and amended elsewhere in the future, we hope to see the application and innovation of novel methodologies that bring archaeological perspectives to bear on current events.

How will our experiences color and shape archaeological inquiry in deeper time? We expect there to be a resurgence in archaeological studies of pandemics and social isolation, which may be productively linked to the needs and concerns of contemporary communities. Our study underscores the importance of focusing on the uncertainty and changing nature of pandemics. In the future, when archaeologists consider the materiality of disasters like the Spanish Flu or Black Death,

they will do so with firsthand experiences to shape their interpretations. When did material culture associated with past illnesses arrive to the scene, and was there anxiety as people waited and navigated emerging social-material orders? Contemporary archaeological data sets will be beneficial to bring into dialogue with discussions of historical disease and other disasters (see again Gamble et al., 2021).

Beyond anthropology, it is worth considering how material analysis may help structure responses to future crises. Just as archaeologists argue for the social relevance of ancient findings in the navigation of modern-day disasters (Riede, 2017), systematic archaeological study of the recent past holds substantial potential. Highlighting a disconnect between policies and their material implementations, archaeological observations on multi-scalar responses to the pandemic have the potential to positively inform policy. Such interventions may be focused on meaningfully shaping long-term behavior, rather than short-term compliance. Contemporary archaeology may thus provide not only a source for critical reflection on the current moment, but also a starting point for future archaeologists and policy makers alike to approach diverse manifestations of global crises.

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References

- Angelo D, Britt KM, Brown ML, et al. (2021) Private struggles in public spaces: Documenting COVID-19 material culture & landscapes. *Journal of Contemporary Archaeology* 8(1).
- Bagwell M (2009) After the storm, destruction and reconstruction: The potential for an archaeology of hurricane Katrina. *Archaeologies* 5(2): 280–292.
- Camp S (2020) Coronavirus disease 2019 (COVID-19) heritage: Coping with trauma by documenting trauma. *The Society for Historical Archaeology Newsletter* 53(2): 17–18.
- Darvill T (2008) *The Concise Oxford Dictionary of Archaeology*. 2nd ed. Oxford: Oxford University Press.
- Dawdy SL (2006) The taphonomy of disaster and the (re)formation of New Orleans. *American Anthropologist* 108(4): 719–730.
- Dawdy SL (2016) *Patina: A Profane Archaeology*. Chicago: University of Chicago Press.
- De León J (2012) Better to be hot than caught: Excavating the conflicting roles of migrant material culture. *American Anthropologist* 114(3): 477–495.
- De León J (2015) *The Land of Open Graves: Living and Dying on the Migrant Trail*. Berkeley: University of California Press.

- Edensor T (2005) Waste matter – The debris of industrial ruins and the disordering of the material world. *Journal of Material Culture* 10(3): 311–332.
- Farstadvoll S (2019) *A speculative archaeology of excess: Exploring the afterlife of a derelict landscape garden*. PhD Dissertation, UiT: The Arctic University of Norway, Norway.
- Gamble LH, Claassen C, Eerkens JW, et al. (2021) Finding archaeological relevance during a pandemic and what comes after. *American Antiquity* 86(1): 2–22.
- Gruda HJ (2020) #CollectingCorona. In: Edenheiser I, Tietmeyer E and Boersma S (eds) *What's Missing? Collecting and Exhibiting Europe*. Berlin: Dietrich Reimer Verlag, pp. 72–73.
- Hamilakis Y (2017) Archaeologies of forced and undocumented migration. *Journal of Contemporary Archaeology* 3(2): 121–139.
- Harrison R and Breithoff E (2017) Archaeologies of the contemporary world. *Annual Review of Anthropology* 46(1): 203–221.
- Helsedirektoratet (2020) *The Norwegian Directorate of Health has issued a decision to close schools and other educational institutions*. Available at: www.helsedirektoratet.no/nyheter/the-norwegian-directorate-of-health-has-issued-a-decision-to-close-schools-and-other-educational-institutions (accessed May 15, 2021).
- Hicks D and Mallet S (2019) *Lande: The Calais 'Jungle' and Beyond*. Bristol: Policy Press.
- Jusseret S (2014) Earthquake archaeology. *Journal of Contemporary Archaeology* 1(2): 277–296.
- Khatchadourian L (2020) False dilemmas? Or what COVID-19 can teach us about material theory, responsibility and 'hard power'. *Antiquity* 94(378): 1649–1652.
- Kiddey R (2017) *Homeless Heritage: Collaborative Social Archaeology as Therapeutic Practice*. Oxford: Oxford University Press.
- Koronaloven [Corona Law] (2020) *Midlertidig lov om forskriftshjemmel for å avhjelpe konsekvenser av utbrudd av Covid-19 mv [Temporary law on regulatory authority to remedy the consequences of outbreaks of Covid-19, etc.]*. Oslo: Stortinget.
- Lorentzen H and Dugstad L (2011) *Den Norske Dugnad: Historie, Kultur og Fellesska [The Norwegian Dugnad: History, Culture and Society]*. Kristiansand: Høyskoleforl.
- Magnani M and Magnani N (2018) Archaeological ethnography of an indigenous movement: Revitalization and production in a Skolt Sámi community. *Journal of Social Archaeology* 18(1): 3–29.
- Magnani N and Magnani M (2020) Material methods for a rapid-response anthropology. *Social Anthropology* 28: 312–314.
- Magnani M, Venovcevs A, Farstadvoll S, et al. (2021). How to record current events like an archaeologist. *Advances in Archaeological Practice*.
- Minister of Health and Care (2020). Innkalling til dugnad [Call to *dugnad*]. Available at: www.regjeringen.no/no/aktuelt/innkalling-til-dugnad/id2693216/ (accessed May 15, 2021).
- Ministry of Agriculture and Food (2008) *Handlingsplan for bekjempelse av iberiskogsnegl [Action plan for combating the Iberian slug]*. Available at: https://nst.dk/media/nst/Attachments/Handlingsplan_iberia_kortversjon.pdf (accessed May 15, 2021).
- Myhre KC (2020) COVID-19, dugnad and productive incompleteness: Volunteer labour and crisis loans in Norway. *Social Anthropology* 28: 326–327.
- Nilsen A, Eklund AC and Skarpenes O. (2020) Coping with COVID-19. Dugnad: A case of the moral premise of the Norwegian welfare state. *Journal of Sociology and Social Policy*. Online publication ahead of print. Available at: <https://doi.org/10.1108/IJSSP-07-2020-0263>.

- Norwegian Institute of Public Health (2020) *Routine use of gloves for shop employees and customers is not recommended*. Available at: www.fhi.no/en/op/novel-coronavirus-facts-advice/advice-and-information-to-other-sectors-and-occupational-groups/routine-use-of-gloves-for-shop-employees-and-customers-is-not-recommended/ (accessed July 1, 2021).
- Norwegian Institute of Public Health (2021a) *Coronavirus disease – Advice and information*. Available at: www.fhi.no/en/id/infectious-diseases/coronavirus/ (accessed July 1, 2021).
- Norwegian Institute of Public Health (2021b) Daily report and statistics about coronavirus and COVID-19. Available at: www.fhi.no/en/id/infectious-diseases/coronavirus/daily-reports/daily-reports-COVID19/ (accessed July 15, 2021).
- Office of the Prime Minister (2020) *Nye nasjonale innstramminger [New national austerity measures]*. Available at: www.regjeringen.no/no/aktuelt/nye-nasjonale-innstramminger/id2776995/ (accessed April 20, 2021).
- Olsen B (2013) Reclaiming things: An archaeology of matter. In: Carlile PR, Nicolini D, Langley A (eds) *How Matter Matters: Objects, Artifacts, and Materiality in Organization Studies*. Oxford: Oxford University Press, pp. 171–196.
- Rathje WL (1977) In praise of archaeology: Le projet du garbage. *Society for Historical Archaeology Special Publication Series 2*: 36–42.
- Rathje WL (1984) The garbage decade. *American Behavioral Scientist* 28(1): 9–29.
- Rathje WL and Murphy C (2001) *Rubbish!: The Archaeology of Garbage*. Tucson: University of Arizona Press.
- Reid JJ, Schiffer MB and Rathje WL (1975) Behavioral archaeology: Four strategies. *American Anthropologist* 77(4): 864–869.
- Riede F (2017) Past-forwarding ancient calamities. Pathways for making archaeology relevant in disaster risk reduction research. *Humanities* 6(4): 79.
- Schofield J, Praet E, Townsend KA, et al. (2021) COVID waste’ and social media as method: An archaeology of personal protective equipment and its contribution to policy. *Antiquity* 95(380): 435–449.
- Schofield J, Wyles KJ, Doherty S, et al. (2020) Object narratives as a methodology for mitigating marine plastic pollution: Multidisciplinary investigations in Galápagos. *Antiquity* 94(373): 228–244.
- Science Museum Group (2020) Ethical Guidelines – Collecting Covid-19. Available at: <https://www.sciencemuseumgroup.org.uk/wp-content/uploads/2020/04/SMG-Ethical-guidelines-Covid-19.pdf> (accessed June 22, 2021).
- Sivesind KK, Lorentzen H, Selle P, et al. (2002) *The Voluntary Sector in Norway: Composition, Changes, and Causes*. Oslo: Institute for Social Research.
- Stallabrass J (1996) *Gargantua: Manufactured Mass Culture*. London: Verso.
- World Health Organization (2020a) Corona Virus. Available at: www.who.int/health-topics/coronavirus (accessed July 15, 2020).
- World Health Organization (2020b) *Coronavirus Disease 2019 (COVID-19): Situation Report 1*. Geneva: World Health Organization.
- World Health Organization (2020c) *Coronavirus Disease 2019 (COVID-19): Situation Report 112*. Geneva: World Health Organization.
- Yazdi LP (2010) Public and private lives in Iran: An introduction to the archaeology of the 2003 Bam earthquake. *Archaeologies* 6(1): 29–47.
- Zimmerman LJ, Singleton C and Welch J (2010) Activism and creating a translational archaeology of homelessness. *World Archaeology* 42(3): 443–454.

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