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Parasitic Resilience: The Next Phase of Public Health Preparedness Must Address Power Imbalances Between Communities

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Community resilience, a system's ability to maintain its essential functions despite disturbance, is a cornerstone of public health preparedness. However, as currently practiced, community resilience generally focuses on defined neighborhood characteristics to describe factors such as vulnerability or social capital. This ignores the way that residents of some neighborhoods (as "essential workers") were required during the COVID-19 pandemic to sacrifice their wellbeing for the sake of others staying at home in more affluent neighborhoods. Using the global care chain theory, we analyze the way that the resilience of affluent neighborhoods depends on siphoning off the labor of other, less affluent neighborhoods, creating what we call the *parasitic nature of resilience*. We argue that understanding this neighborhood interdependence—and accounting for its parasitic nature—should be prioritized by public health authorities to prevent unintentional harm in future pandemics. Otherwise, any public health emergency response that relies on this labor (as did the COVID-19 pandemic response) depends on exploitative practices that produce the very disparities the response is trying to address. We explore the theoretical grounding and practical effects of this idea to provide the preparedness enterprise with an initial set of theoretical tools to move from a model of *community resilience* to one of *community renewal*. The community renewal model is based on an underlying ethics of care, in which systems are redesigned to become more prosocial during a public health response. We believe this model can more successfully address the tragic inequities in labor and health outcomes that we see during public health emergencies.

Keywords: COVID-19, Public health preparedness/response, Epidemic management/response, Resilience, Essential workers, Citizen engagement

Introduction

On May 10, 2022, a new advocacy coalition, Justice for App Workers, held a memorial service for home delivery drivers from the East Coast and Midwest who had died or had been killed since the beginning of the COVID-19 pandemic.[1] They had reason to mourn. During the pandemic, demand for home delivery spiked. As the pandemic unfolded, delivery workers brought food to those who could afford to isolate and interacted with restaurant workers and clients, while lacking the resources or paid sick leave to stay home themselves. In fact, delivery workers showed the smallest drop in work time of any job category during pandemic lockdowns, dropping only from 37.8 to

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34.9 hours per week.[2] App-based delivery workers also had to implement (and generally pay for) preventive measures themselves, compared with workers who were more formally employed. Others in the transport sector were also impacted. Two-thirds of ride-hailing drivers, for instance, reported carrying passengers with COVID-19 symptoms.[2] No wonder that 100% of workers surveyed in the sector reported that their job-related stress surged during the pandemic.[3]

Tragically, studies in the United States and the United Kingdom found that transport workers were ranked first or second in proportionate mortality by occupation outside of the medical professions.[4,5] Few studies have addressed this cohort of gig workers; however, a study in Ho Chi Minh City, Vietnam, found that "while delivery riders […] placed themselves at risk to help sustain the urban economy and meet the daily needs of fellow urbanites during the COVID-19 lockdowns, their own work conditions (and health) […] deteriorated and their livelihoods [became] increasingly precarious."[6]

This surge in demand had fatal consequences beyond COVID-19. When companies pressured delivery workers to meet demand, more of the workers died on the roads.[7] Deaths of driver/sales workers and truck drivers spiked 16% in 2020-2021, an all-time high for the transportation sector, and accounted for 20% of workplace fatalities overall.[8] The more specific the findings, the worse the data. The Federation of All Anatolian Motorcycle Couriers found that in Istanbul, the number of motorcycle couriers who died in fatal crashes spiked 10-fold during the COVID-19 pandemic.[9] Even this is not the whole story since death rates are not well known within this occupation subgroup. The death rate totals among Amazon workers, for instance, "do not include its network of third-party delivery drivers, which handle a portion of last-mile deliveries."[10]

We do not know how many have died, but the surge in demand shows why: they died to make sure other, better-resourced residents (usually in different neighborhoods than their own) could stay at home—and live.

The current community resilience model—a cornerstone of public health preparedness—does not account for this sacrifice. Based on vulnerability or social capital maps of specific areas, it cannot address the way that some residents are required during pandemics to serve the needs of others in other locales. We saw this clearly during the COVID-19 pandemic, throughout multiple service industries, within healthcare, and, in some cases, within the emergency response community itself. Those able to work from home and abide by lockdown orders did so on the backs of those who could not. They relied on home grocery and food delivery, ordered essentials from Amazon, and hired babysitters and "pod" teachers in response to school shutdowns.[11] This caused health, financial, and moral injuries to a set of already vulnerable populations well beyond delivery drivers.[12] The Trades Union Congress of England and Wales found that those working in insecure service labor jobs—who were exposed to similar working conditions like public interaction, crowded transportation for their commute, and lack of opportunity to social distance—were twice as likely to die from COVID-19.[13]

This sharp inequity illuminates the parasitic nature of community resilience. The maps of "resilient" and "vulnerable" communities do not measure the inherent qualities of those communities but the ability of some communities to function by siphoning labor and resources from others. Understanding this interdependence, as well as accounting for its parasitic nature, should be prioritized by public health authorities to prevent unintentional harm in future pandemics.

In this article, we explore the theoretical grounding of this idea and its consequences in order to provide the broader preparedness enterprise with some initial tools to move from *community resilience*, in which the essential nature of a system is maintained, to *community renewal*, in which systems are redesigned to become more prosocial during public health response. By more specifically addressing the root cause of disparities, this approach will more effectively close the tragic gaps in health outcomes that we see during public health emergencies. A community renewal approach requires an underlying shift in responder ethics, from the current utilitarian framework that underpins resilience[14] to a new approach based on care ethics. A care-based approach would understand that all care work during a crisis is part of the official response and would focus on centering and surging that work across society to minimize harm caused by the emergency.

Community Resilience and Care Drains

Community resilience is defined within the US Centers for Disease Control and Prevention's 2008 *Ethical Guidance for Public Health Emergency Preparedness and Response* as the "capacity of a (natural or social) system to absorb external disturbances without losing its essential continuity and coherence."[15] The community resilience model was a welcome advance over earlier, more tactical preparedness efforts. Tools like the COPEWELL framework[16] and the Los Angeles County Community Disaster Resilience project[17] predate COVID-19, but their focus on community function was borne out during the pandemic. Aldrich, Fraser, and Page-Tan have shown that the connections within a community, up to its political power structures, have real impact.[18,19] However, both the US Centers for Disease Control and Prevention's own social determinants of health framework[20] and multiple fields outside of health preparedness (particularly Crenshaw's model of intersectionality[21]) show that no system can be examined in isolation. The *essential continuity and coherence* of any given community is based on power dynamics that enrich some at the expense of others.

Community resilience, whether analyzed through neighborhood function or social capital, does not account for

these power dynamics. Instead, it focuses on static individual and community characteristics, partly driven by its map-centric analyses. Yet humans are never static and communities are porous, which the infectious nature of COVID-19 made painfully clear. Drawing together relational accounts of autonomy from feminist bioethics,[22] Fineman's thinking on the cascading nature of vulnerability,[23] and Jacobs' contention that vulnerability is created by oppression linked to racial capitalism,[24] we argue that pandemics reveal humans as *vulnerable vectors*; that is, each of us is vulnerable to contagion, and in our vulnerability, we are vectors of contagion to others—especially to those we care for or who care for us.[25] Vectors are not static, of course, but mobile. The interaction between them is what creates vulnerability, which then cascades outward through their relationships, whether within or between communities. Outside of the disaster space, the consequences of this idea have been explored by scholars of caregiving labor using the idea of *care chains*.[26]

In capitalist societies, every day, caregiving labor is outsourced by those who can afford it. The wealthy use daycares, private nannies, and home healthcare aides to take their caregiving burdens so they can perform more profitable labor.[26] These care workers must then find others to care for their own children or older adult family members, or risk creating a gap in care. This creates a care chain, a social network defined by the need to provide care.

These social networks are not equitable, however. Care chains produce *care drains*, in which those providing the lowest-paid caregiving labor have fewer material resources and, thus, fewer options for outsourcing their own care needs.[26] The caregivers' situation is tenuous: who will take care of their own children, their ailing relatives? Further down these care chains, this process generates increasingly informal linking relationships that are hard to analyze (eg, because of nontaxed cash payments or unpaid family assistance), often in the poorest and most vulnerable communities, both locally and globally. Care chains are thus an example of a vector through which vulnerability flows downward, producing starkly raced, gendered, and classed health, economic, and social disparities. While the term *care drain* was coined to refer to a global migration of caregivers that saps caregiving resources in migrants' countries of origin, the COVID-19 pandemic has shown how the surge of caregiving labor in public health emergencies creates similar drains across impacted communities.

Expanding this care chain idea from traditional caregiving to recognize the care provided by "essential workers" during the COVID-19 pandemic helps us apply the concept to public health response. Broadly speaking, most emergency labor is caregiving, requiring sacrifices from some populations (whether emergency workers or checkout clerks) to benefit others. During the COVID-19 pandemic, we saw that care chains based in such diverse sectors as healthcare, food service, and emergency management bound workers to the vectors of vulnerability we describe.

These workers rarely served their own neighborhoods. For example, Boz et al[27] analyzed New York City mobility patterns and found that higher-level socioeconomic neighborhoods were more "resilient" partly because their residents were more able to restrict their travel. They concluded that neighborhood services (eg, walkable grocery stores and pharmacies) supported the lower mobility, and thus higher resilience, of a given neighborhood. They also showed, however, that "less affluent and less educated neighborhoods had less adaptability to policy interventions aimed at reducing their mobility level." [27] That is, workers who lived in less affluent neighborhoods kept traveling to other, more affluent neighborhoods even after lockdown mandates. These workers could not stop moving since they were required to help others stay in place. This is a pandemic care chain. Like other care chains, it produced tragic care drains. As models have revealed, long commute times are a greater risk factor than transit crowding for disease spread[28]; service workers' home neighborhoods then suffered higher COVID-19 death rates partly because the workers were forced to commute. These harms provide a window into why and how connections between neighborhoods matter, not just neighborhood characteristics.

Care drains show that vulnerability is never a feature of a community but is created by the vectors through which power and care labor flow. As labor flows up these chains, through formal and informal practices of outsourcing (eg, delivery is ordered, childcare procured), vulnerability flows down. This vulnerability takes the form of increased exposure/contagion, ongoing financial distress, and often a lack of access to the very caregiving resources these workers are providing to others. These vectors are thus parasitic, increasing stability in one community by increasing vulnerability in another.

The Underside of Social Capital

Clearly, social connections have costs, though most related scholarship focuses on their benefits. Kyne and Aldrich persuasively argue for the importance of 3 types of social capital during emergencies: *bonding*, which measures connections within social groups (eg, through demographic similarities); *bridging*, which measures connections across social groups (eg, through workplaces, sports); and *linking*, which measures vertical ties to institutional and government structures.[29] The analyses provided by Fraser, Aldrich, and Page-Tan are, in general, more predictive of resilience to COVID-19 than traditional social vulnerability indices. In particular, he and his team have found that bridging social capital (ie, links between different groups) consistently reduced COVID-19 spread.[18,30,31] Yet, even when these relationships are found to increase infection rates, as bridging social capital did during superspreader events, this is ascribed to the basic existence of the relationship within the model, not any directional power flow within it.

This gap hinders a full understanding of the way the relationships themselves can create vulnerability. Historically, social capital research has clearly shown that not all connections are prosocial. For example, in his book *Building Resilience*,[32] Aldrich focuses on defined or formal links to government and institutional structures (such as voter turnout in New Orleans) in his case studies of linking social capital. However, Szreter and Woolcock[33] (whom Aldrich and colleagues cite) describe linking social capital as the development of *positive* bonds with those of greater social power, like local politicians or bank managers. To underscore the distinction, Putnam[34] points out, "In Italy, for example, the frequency of contacts between citizens and local officials is strongly negatively correlated with social trust and political responsiveness and economic growth, since in that setting such personalistic 'linking' networks are symptomatic of patron–client exploitation." Thus, linking social capital originally was meant to describe an unexpected or unusual benefit within broader conditions of often corrosive inequality. Putnam clarifies this when he says of both bridging and linking capital, "Not all vertical networks have prosocial consequences, especially if the disparities in power within the network are substantial and mainly exercised by the powerful to control the powerless." In other words, the nature of the power flowing through a connection matters as much as the connecting itself.

This calls for a new analytic tool, a *care chain analysis*, that can help public health authorities better account for the inequitable systems that produce these patterns.[23] For example, Boz et al[27] (who found that the less affluent kept traveling during lockdowns) argue that creating more services like grocery stores in lower-income areas would help those residents stay in place. Analyzing the care chain in play, however, it is clear that residents were traveling not to shop for groceries, but to work. They were providing a service of care (food delivery) in more "resilient neighborhoods" at the cost of the resilience of their own, as the data from Boz et al show. More grocery stores in less resilient neighborhoods is not the answer; rather, policymakers must account for the root cause: the ways that affluent neighborhoods siphon resilience from less affluent neighborhoods,[35] increasing the infection counts, contagion, and death among the latter.

Yearby[36] describes the legal mechanism for this harm by showing how underlying structural discrimination drives law and policy, which then produce inequities across the social determinants of health. These inequities are experienced as higher rates of mortality and morbidity during emergencies. By ignoring how vulnerability is created, public health cannot create an accurate root cause analysis. Irrationally, we use maps and policies that treat race, gender, income, and geographic location, among other factors, as if they produce both vulnerability and resilience, though most practitioners realize this is not the case. Refusing to address the cross-population factors that create vulnerability leads to resilience policies that are not a "positive-sum game" as noted by Matyas and Pelling[37]; the same policies and practices that increase resilience in some components of a system often accomplish this by decreasing resilience in others. This has practical consequences. It means that society has patterned public health response itself on privatized care chains, normatively recast through the lens of "essential" workers. We have built a public health response system that requires exploitation to function.

For example, let us compare 2 missions: delivery workers versus contract tracers during the COVID-19 emergency in the United States. At the beginning of the COVID-19 pandemic, officials hired or contracted tens of thousands of new staff to track lines of infection. Most officials agreed these roles did not require more than a high school diploma.[38] Hourly rates ranged from US$17to US$25 per hour. Many states provided benefits, training, equipment, and, crucially, a sense of purpose connected to the larger response.[39] Many jurisdictions are now developing professional pathways for these contact tracers, given shortages in the US public health workforce. Delivery workers in New York City, by contrast, made around US$11 per hour during the pandemic, or US$4 per hour before tips, after paying for their own hourly expenses, according to a NYC Department of Consumer and Worker Protection report.[40] We have also seen their risks of transmission, illness, and broader occupational injury increase.

There was no difference in the essential function of these 2 roles from a public health emergency standpoint. Both provided care labor toward capabilities required by the emergency response, whether supporting outbreak investigation or social distancing. Yet 1 function, because it existed in society before the emergency, was expected to be "resilient" despite the underlying discrimination that powered it, whereas the other was rapidly designed within the official response to receive greater worker support. This inequity was made worse since the official responders, the contact tracers, were rarely hired from the communities they served, but were much more likely to be college educated workers recruited from other professions.[41-44]

From Resilience to Renewal

Leaders in the United States did begin to address these issues through COVID-19 policy protections. As job, food, and housing insecurity spiked, city, state, and federal leaders expanded worker health, safety, and economic benefits, including through sick leave and cleaning guidelines.[3] In general, health preparedness policies are also advancing toward equity, with elements like the COPEWELL framework naming inequality as a negative input for community function. Many response organizations have declared commitments to equity, as in the US government's new Federal Plan for Equitable Long-Term Recovery and Resilience.[45]

Still, public health authorities are often loath to see these questions as essential to the goals of emergency response. In the initial COVID-19 surge, Dr. Anthony Fauci described the virus as "an exacerbation of a health disparity," noting that the conditions that "[led] to a bad outcome with coronavirus"

were disproportionately prevalent in Black Americans. But this racial health disparity was, for Fauci, external to the problem of the pandemic: "[There was] nothing we [could] do about it […] except to try and give them the best possible care to avoid those complications."[46] This idea that structural discrimination is separate from emergencies is perhaps why even the most progressive COVID-19 policies (eg, funding for unemployment or childcare) never acknowledged or addressed the underlying injustice powering these insecurities. By mid-2023, most of these policies had expired, as the idea of the pandemic receded and a new idea formed: that we have weathered the disturbance and can return to normal—in other words, that we are resilient.

Just as prior practitioners advanced from tactical preparedness planning to addressing community resilience, the COVID-19 experience reveals that it is time for the next step. We have to move beyond comparing the capacities of different communities to address the ways that injustice structures parasitic relationships between those communities. Unfortunately, as Jacobs[24] argues, this injustice is required for the stable functioning of affluent communities within racial capitalism. It is the engine behind the delivery worker model, for example. This requirement helps explain why underlying mortality gaps have persisted despite so many governmental resilience efforts. These do nothing to address the parasitic root cause, which is that neighborhoods at the end of care chains must sacrifice their talent to provide care to others higher on the socioeconomic scale. This parasitic connection, rather than the "disparity" itself, is the more fruitful focus of preparedness planning.

Of course, any focus on injustice puts public health officials in a difficult position. There is precedent for such a change in approach, however. In their 2008 ethical guidance for public health emergency preparedness and response, Jennings and Arras[15] urged the US Centers for Disease Control and Prevention to adopt a *civic renewal* perspective, saying, "[W]e believe that emergency planning, if structured and carried out in a participatory fashion, could make a contribution […] to the task of reinforcing civic life and liberal democratic values." A recent commentary by Parasidis and Fairchild[47] expanded on this call, arguing that public health should "emphasiz[e] communitarian values and social justice. Balancing individual autonomy and the common good remains central, but public health ethical frameworks do not begin with an emphasis on individual interests. […] Public health practitioners must address complex questions of health, equity, and social justice."

Moving from resilience to renewal requires organizing public health emergency response around an approach based on care ethics, rather than the more narrow, utilitarian idea of lowering morbidity and mortality. Care ethics is a moral framework drawn from feminist bioethics that emphasizes our shared vulnerability and dependency.[48,49] A care ethics orientation offers a more responsive approach that surges existing and emergent networks that care for the vulnerable[23] (such as emergent mutual aid) rather than building custom emergency structures. Such an approach would provide neighborhood care through local institutions rather than contract outside vendors. It would also involve holding employers to a duty of care for their employees, as suggested by Gaitens et al.[12] A care focus would mean giving substantially more response support to caregivers throughout society, hopefully lessening the burnout of public health workers, for instance. Resourcing local caregivers fairly minimizes the parasitic nature of their networks during emergencies. Fairness would involve something perhaps more difficult, however: ending the dependence of affluent communities on low-paid laborers who then become casualties.

How would this work? One key priority of *Unbossed*,[50] the Black domestic work agenda from the National Domestic Workers Alliance, is *infrastructure in communities*. Their language is clear: "Black women have cared for individuals and families in this country for centuries, often sacrificing our own families' care in order to serve employers." They urge a shift from the current care drain-creating idea of care as an "individual burden" to "care as a collective responsibility." Their solutions focus on building social support in underinvested communities to end the consequences of the care drains they face.

We can expand on our delivery worker/contact tracer example to clarify what this might mean. First, in this paradigm, the secondary and tertiary impacts of an emergency (whether lack of childcare or food insecurity) would be as integral to response as disease spread. Delivery workers would be as integrated within emergency structures as healthcare workers, with attendant benefits. Taking this idea seriously means considering the associated labor relationships as well, with union presence, sick leave availability, and other factors tracked as markers of how positive or parasitic a relationship might be. Second, the design of response operations would assess the inequitable power flows between communities. Contact tracers and other response laborers, for example, would be hired primarily from historically marginalized communities and/or from those communities most impacted by the epidemic. More broadly, emergency funds would go directly to local communities, with services provided within those communities by their members, rather than outsourced to large contractors. Finally, the power relationships that sustain ongoing injustice would themselves be the target of interventions. This requires work with both more marginalized populations suffering from care drains and the affluent groups whom these care chains are there to serve. Relevant questions are: How can the more affluent provide additional investment to those communities providing their care? How can these relationships be made more egalitarian during emergencies in order to decrease overall mortality? Response operations, such as our delivery workers and contract tracers, would have the freedom and resources to self-organize to increase justice to themselves and their families. Understanding operational success would require new data instruments and analyses that take the idea of parasitic resilience seriously, such as social capital maps that track care chains in such diverse areas as childcare, education, or domestic service.

Conclusion

If we accept the idea that resilience as currently practiced is parasitic, it is clear that health inequity, economic exploitation, and pandemic mortality rates are not distinct issues; they are each part of the same problem. A better approach would ground public health emergency response in an ethics of care that can prompt community renewal, incorporating both primary and secondary harms into the emergency response mission and ensuring justice for all responders across the networks surging to provide needed care. In this intensely political era, using such an approach might seem improbable, with some of the societal change necessary well outside the control of public health officials. But energy toward this vision in increasing. Justice for App Workers, the coalition that began in the face of COVID-19 and mourned its dead in May 2022, started with 100,000 members.[51] Now it is up to 300,000 and growing, as more workers see the links between these injustices and their own health. Advocacy groups like this show us the investment needed to make renewal work, and public health, guided by harms clearly linked to the social determinants of health, should learn from them. As Reverend Al Sharpton and other activists have noted for decades, "We're not going back to normal. We died in normal."[52] With the stakes this high, it seems appropriate for public health responders to think creatively, once again reshaping the bounds of preparedness, to use emergency response to address parasitic resilience and prompt renewal—literally, to better care for our fellow humans.

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