

Episode: Ethics Talk Videocast Transcript – Embodied History, Health Justice, and COVID-19 (Part 1 and 2)

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[bright theme music plays]

TIM HOFF: Welcome to *Ethics Talk*, the *American Medical Association Journal of Ethics* podcast on ethics in health and health care. I'm your host, Tim Hoff. This episode is an audio version of a two-part video interview conducted by the Journal's editor in chief, Dr Audiey Kao, with Dr Nancy Krieger. Dr Krieger is a Professor of Social Epidemiology in the Department of Social and Behavioral Sciences at the Harvard T.H. Chan School of Public Health. She joined us to talk about the population health impacts of historical injustices and structural racism. To watch the full video interviews, head to our site, JournalofEthics.org, or visit our [YouTube channel](#).

DR AUDIEY KAO: Dr Krieger, thanks for being a guest on *Ethics Talk* today. [music fades out]

DR NANCY KRIEGER: Very much appreciate the invitation. Thank you.

KAO: So, compared to getting my medical degree, getting my PhD was a more solitary pursuit. For example, dissertation defenses are usually sparsely-attended affairs. But I've read accounts that it was standing room only for yours at the UC Berkeley School of Public Health. Attendees were apparently taking notes as fast as they could because they didn't want to lose any of it. Your doctoral thesis was entitled *Race, class, and health: Studies of breast cancer and hypertension*. Can you tell our audience about the main findings of your dissertation research and how it's set the groundwork for your interdisciplinary scholarship that has reimaged our understanding of the determinants of population health?

KRIEGER: Thank you very much. Yeah, it was fun doing my dissertation defense quite a while ago now. And I must say one of the interesting things with COVID-19 right now is the shift to move to a virtual defense of some of my students. And that's actually allowed a whole lot more people to attend, which has been very nice and makes the dynamic, very different.

KAO: That's interesting.

KRIEGER: But not that it's great. It's still much nicer to do it in person, however. But it's good to have the expanded audience possibilities. So, my dissertation came out of a time I was getting my, obviously, doctorate in epidemiology, social epidemiology at the time. I'd gotten a Master's before. And while doing some of the work in my Master's thesis, I was very interested in the questions of racism, class, and health in many different ways, partly occupational health background, partly other things. But I got drawn to the question of particularly breast cancer and was really appalled back then to discover that in the cancer registries—as is still the case. But it's different now a little—you could get data on race/ethnicity, but there's no socioeconomic data. And obviously, you end up that way with only racialized statistics. And you can't understand the extent to which racial inequities and

economic position because of social injustice and structural racism are affecting what's going on. But you also are engaged in those debates. Well, is it only a matter of class? How does racism then fit in in the parts that are not economic?

So, back then, I had done—and this is critical for my dissertation—I'd started getting involved in trying to figure out, well, if you knew something about where people lived, you could connect to what their census tract information was or the census block group information. And I know that this was at a time that was long before any of this was easily digitized. So, to geocode addresses, one sat in your room with the radio on and just cut it with an address book. So, for my dissertation, I built on that, and I worked with the cancer registry to actually do two things. One was to actually geocode records and to look at what was going on with the incidence rates of breast cancer amongst particularly Black and White women in relation to also their census tracts' socioeconomic characteristics. I also wanted to validate that methodology, and that meant that I got to do a survey. And I worked with the cancer registry staff to do that survey.

And in doing that survey, I also decided that it made sense, that I was very struck by the fact that there seemed to be virtually no studies—I mean, I could count them on one hand at that time—that were in public health and epidemiology that actually asked people about questions of their experiences of discrimination. And that made absolutely no sense to me. People asked about all other kinds of things. Why not ask about this?

KAO: Right.

KRIEGER: So, I put in questions. I built those in. And that led to the first development of the Experiences of Discrimination questionnaire that's become one of the more widely-used instruments. And that was the beginning. I did subsequent work to validate it. So, what then happened was being able to think about that also in relation to data around blood pressure and to start to do the initial work, to start to ask those questions, just beginning. Because I did a subsequent study a few years later after I graduated to start to really begin to ask the question, do people's self-reported experiences of racial discrimination in particular connect at all to what their profiles are in terms of cardiovascular disease, and in that particular case, hypertension? So, the themes came together in different ways around class, around racism, around gender. Those have been integral to my thinking since I started even thinking about doing anything in science. And they came together methodologically, but also important, they came together theoretically.

And what I would add is that I was doing this work at a time where that kind of what is now called intersectional thinking was actually not that uncommon. In fact, I was at that point already. I'd become involved in the mid-'80s in the National Rainbow Coalition was Jesse Jackson's work and was actually, for the 1988 presidential campaign, I was part of the National Rainbow Health Commission. And my role on that commission was actually to draft the AIDS platform for the Jesse Jackson campaign, which was very beneficial because it helped push to a more progressive stand the AIDS platforms of others.

KAO: Hmm.

KRIEGER: I was very much in the thick, where the framework is rainbow politics. The idea is that every stripe matters, but together they create something more. You don't lose what are the distinct issues, but you also understand the connection of issues. And clearly, what's also changed over time, which is nice, is that the rainbow notion most recently, for example, specifically in LGBTQ communities, has been expanded so that it's not just the

rainbow flag anymore, but also includes colors of black, brown, and colors for trans around. And so, it's really important that that notion of rainbow becomes that much more inclusive.

But just to say that although it was unusual that I was doing that work in the frame of epidemiology, of thinking theoretically and methodologically, how do you understand the issues of racism and class in relation to gender and also—although that was not directly part of the dissertation—sexuality at that time, how did these things come together to affect population health? That kind of thinking was feasible. Other people were asking those questions. It just needed to be brought more firmly in a centered way into the field itself.

KAO: Yeah. So, in reflecting on your scholar activist work, I'm reminded of the aphorism that health is wealth. So, if you're sick, your health may not be retrievable no matter how much money you spend. On the other hand, the work that you just mentioned has empirically demonstrated that wealth is health. Or stated another way, income inequality is a leading contributor to disparities in health. So, as opposed to biological inheritance, your work has illuminated the health consequences of intergenerational transfer of wealth or what you've called societal inheritance. Can you explain this distinction between biological and societal inheritance? And what are its implications for social policy choices aimed at addressing racist policies like Jim Crow that have resulted in transgenerational harms and inequities in health?

KRIEGER: So, that's a lot in that question. [chuckles] What I'll start with is an understanding of what even is the idea of inheritance. So, the word itself, if we trace it etymologically, it refers to that which is passed from parents to progeny. And it was always in terms of physical property, actual wealth however it was reckoned in that society. But it comes from being the inheritors, the heirs, the people that are getting something by familial transmission as set up by the rules of their society. Because different societies and different political economies have different rules for inheritance.

So, what happened is it was until the 1900s, it was very much an economic social term. Then it got brought in increasingly by people that were working in genetics to think about one inherited something from one's parents, even though it wasn't exactly clear what that was, of the germplasm. So, in 1911, when Wilhelm Johansson coined the constructs—he was a Danish scientist—coined the terms of “genotype” and “phenotype” in a very classic paper that's very key to make incredibly clear that, yes, organisms may inherit. Clearly, gametes contain something that makes the next zygote or however whatever form of reproduction is occurring, that that's not the full story. Because the organism has to grow up and develop. You don't stay a zygote forever. You have cells that differentiate. You get, depending if you're a multicellular organism, you start to get different organs. Things must be changing, turning on and off genes. You're not expressing just 100 percent all the time in every cell. And so, he invented the concepts of genotype and phenotype. And we live our phenotype. That is all you ever see. There is never, you never see anybody's genotype.

KAO: Right.

KRIEGER: What we live is our phenotype. And he complained bitterly in that paper at the beginning of the false use, the misleading use really, of the word “inheritance.” Because it really misses the point that it's not a lump-sum thing you have, because it's part of what you are. But you are dynamically changed in who you become because that's the way

people live phenotypes. That's the way any organism lives its phenotype. And it's an emergent property, which is why I think about living organisms as emergent, embodied phenotypes. So, from that standpoint, yes, different experiences, early life onwards, can have impacts that last across the lifetime.

And it's also to be understood, not just the personal lifetime one's, life course, but what historical generation you are. So, for example, to be age 50 now is not the same as being age 50 in 1950, for example.

KAO: Right.

KRIEGER: If you were born in 1950, if you were 50 in 1950, you were born in 1900. And this matters when you think about things like, for example, Jim Crow. So, Jim Crow was abolished by law in the mid-'60s, I mean, there's different Civil Rights acts that come into play, but from between '65 and '69, a, with regard to the Housing Act and all. And yet people that were born back then, people who were born in 1950, for example, they were in their teens when Jim Crow was abolished. They're alive now. They're older. What were those life experiences? That gets completely lost from a very ahistorical approach that doesn't think about what those impacts are. And I've shown in my own research, for example, it's mattered in terms of infant mortality rates, differences among Black, in terms of born in Jim Crow or non-Jim Crow states. It matters in terms of premature mortality now, and it matters in terms of what kind of breast cancer African-American women get in terms of whether estrogen receptor positive or negative. So, that's one thing.

But another way to think about the histories that come in across generations is we've just published two studies that add to the incredibly tiny body of work that looks at the implications of historical redlining back in the 1930s when the U.S. had first set up those policies that led to this redlining, whereby in the different cities that were evaluated, properties were assigned one of four kinds of codes to say how desirable they were for investment or disinvestment.

And one of the key criteria for redlining was these are places where you should not, according to the people that do the ratings, lend anybody anything for a mortgage. And they were therefore redlined. And they were, if you had any Blacks back then, it was referred to as Negroes very explicitly in the documents. If it was a multiracial ethnic population, if it was low income in any way, the language is often fairly derogatory that's in the appraisals that you can see online.

Those records, those maps only got recently digitized. They were lost for decades. They got rediscovered in the National Archives about two decades ago, only recently been digitized, two years ago. So, people are just starting to use them again now at work. And we've shown that those designations still matter from 80 years ago for risk of preterm birth in New York City and then also with work that we've just done in Massachusetts, cancer stage of diagnosis. And that's even taking into account contemporary characteristics of the areas where people live.

So, that's something which is important because housing, for example, is one of the main ways in which people in the U.S., except for the ultra, ultra-wealthy, have anything that resembles an asset.

KAO: Yeah.

KRIEGER: And if you don't have access to housing, you don't have access to wealth. So, that's really important.

And again, the empirical work is just beginning to be done. And there are probably now, what, still less than what I can count on my fingers of two hands published studies that have rigorously started to look. I think there will be more. I'm aware of more colleagues that are beginning to do the work. And it's not simple work. There's an awful lot of decisions that go into figuring out how to analyze these kinds of data.

But those are ways to start to think about that what matters is who one is, what one's own life course is, when one is living that life course, part of what historical generation, and what is true of your parents? What experiences did they have? It matters if they were in a state of being very impoverished when you were born. Why were they impoverished? These become chains of connections that become extremely important to understand, because it matters for accountability, and it matters for health now. It's not just a historical curiosity.

KAO: So, in economics, talking about socioeconomic status, but in economics, a state of efficiency where resources cannot be reallocated to make one individual better off without making at least one individual worse off is known as Pareto optimality. Economics seems to have played an oversized role compared to other disciplines, other social sciences, in shaping the thinking and approaches taken by today's policymakers. How can we better educate policymakers to a broader set of learned disciplines like social epidemiology? And how do you think that will affect public policy making?

KRIEGER: Every discipline has its sets of theories and debates in those theories, and it also has sets of methods and debates about those methods. So, I'm aware, for example, that a labor economist would give a very different definition, approach to talking about what some of the issues are with economic thinking and what they can contribute to understanding and improving policies that'll have an impact on health, than, for example, someone who's mainly interested in financial capital.

So, I want to be mindful of that and not paint with an overly broad brush, because there are economists who have been really crucial in giving insights into the unjust accumulation of wealth. Because to have an ahistorical, apolitical, acritical view of this is a transfer from this person to that person without considering how that transfer occurred, why there are inequities in the first place—they don't just come out of the sky—is very important.

I think it's very disturbing, for example, this weekend that the senator from Arkansas, Cotton, actually was quoted as saying that he's very angry at the *New York Times* for their series on 1619 in relation to the histories of enslavement in this country, saying that it just gives a false foundation to understanding the origins of this country. And he literally used the phrase that "slavery was a necessary evil."

KAO: Hmm.

KRIEGER: Necessary for whom? Yes, for people that were benefiting from white supremacy, from owning slaves, and from the slave trade, but necessary for people who were enslaved? Generations of people who were tortured, lived in fear and terror under slavery? I don't think so. So, to ask about that kind of redistribution of wealth after wealth has been gained in ways that have fundamental injustice built in, to me, is a very different question than talking about redistributive policies where there's a sense that there was

something that was not completely unjust, unfair, or not by ultimately horrific force that created the wealth divisions in the first place.

And in this country, you can't think about the health of different populations without a, thinking about who and what defines those populations. So, who defines what's Black and what's White? Who defines what's Indigenous, what's not? Where have different groups of Asian-Americans of many different kinds been classified or not as White, Asian, whatever? What the lawsuits are about that. What the laws have been about miscegenation or not. What the laws have been that define whether one is a property holder or not, entitled to vote or not. Populations also don't just drop out of the sky. They are socially shaped, historically defined, and reflect interests of the time that those groups are created. So, you can't think about any population's health in this country without knowing something about the history.

KAO: Yeah.

KRIEGER: I think what happens is that a lot of the work in my field, and in economics often, that is not very critical, doesn't deal with the actual complex histories that involve not only justice, but aspirations for equity.

KAO: Yeah.

KRIEGER: I think that the aspirational parts of recognizing what might it look like to have an equitable society are also important to keep an eye on and to see where policy change has effectuated that as well. So, I do think that having things only framed by economists, the other thing that I've found in a number of my interactions is that where I again come in as someone who's a social epidemiologist. Because I think about time in relation to embodiment and the ways people [audio drops] happens. So, it's not instantaneous. None of this is. And I understand that you carry your history in your body, everyone does, is not the way of thinking.

So, for example, that you see, you can quickly change things like, for example, access to health insurance. You can quickly change, for example, income transfers with regard to tax policy. We've seen an awful lot of that change in the past few decades, where the distribution is ever increased upwards and not downwards in terms of who's benefiting from what tax policy is. But you can't do that with people's bodies.

KAO: Yeah.

KRIEGER: You change a vaccination rate very quickly. But if someone—and this gets back to your very first question—if you've had adverse conditions, they're not all, especially from early life on, they're not all easily remediable in terms of fixing what the health problems are because they're part of you.

And there was a colleague once who was in a mix of both economics and government who wondered, well, do we really need, for example, if the laws are all saying that discrimination isn't supposed to happen, do we really still need to continue to collect things like race/ ethnicity as a category? We understand that it's social, but if it's not really biological, why should you categorize it? And what I said to this person was, "Do a thought experiment," which economists like to do all the time for their counterfactuals. And if you suddenly abolished 100 percent of all racial inequality in this country and you evened out all income and everybody was living in equally great homes and everybody, all of that, but

you kept everybody in the same bodies that they had, would you expect health inequities to disappear overnight?

KAO: No.

KRIEGER: The answer is no.

KAO: Yeah. You know, we could spend I'm not sure how many hours of interviews talking about what you just discussed. And I think that this notion, that thought experiment is quite, is one that I think our audience will need to think deeply about, because making simple changes, we want the simple solution. But we can't look at this ahistorically, as you were mentioning at many points so far in our interview.

KRIEGER: But at the same time, change can happen quickly. So, for example, in other research that I've done, the passage of the abolition of Jim Crow led to very marked reductions very quickly in infant mortality. Part of it was [audio drops] the population, particularly in the South. Part of it was that there was an accumulation, pent up demand, because with part of the abolition of Jim Crow, there was the desegregation of hospitals.

KAO: Right.

KRIEGER: And that was accomplished incredibly quickly. People forget that. That was the Hill-Burton Act.

KAO: Yeah.

KRIEGER: And basically, what happened was very big carrot with very big stick: you don't desegregate, you don't get federal funds. And in a space of time that was just, I think, 20-odd months, these hospitals, which had sworn, of course, always to maintain the two entrances and the two types of service and all the rest and flat out discriminate and segregate, suddenly had to accommodate. And guess what? They did. So, change can happen quickly, for good and for bad.

KAO: Yeah. So, I'd like to switch gears a little and talk about your methodological work. While we don't have time to get into a graduate seminar discussion about empirical methods you've applied and pioneered in the study of population health, can you provide our audience with a basic understanding of the value and applicability of the Index of Concentration at the Extremes?

KRIEGER: Sure. So, the Index of Concentration at the Extremes is actually a measure developed by Douglas Massey, who was one of the leading scholars on residential segregation in this country, and was author among many books of American apartheid, etc. And he used this measure to basically come up with a simple metric that he used only in terms of economics. So, I've extended the use of this measure in ways that I will talk about to address your question.

But basically, what this measure was asking was if you're trying to understand how much is there social-spatial concentrations of extremes and separation, basically polarization? You could look at an area, and you define it geographically or you could define it by an institution. But you have to have something that bounds the population.

KAO: Right.

KRIEGER: You could ask how many people are at one extreme, for example, how many people are impoverished. You could ask how many people are at the other extreme, for example, how many people are really wealthy. And then think about what percent of, what's the difference between the two in terms of how much of the population they occupy. So, if the place, if it's 100 percent wealthy, the measure will have a value of 1, if everyone in that area or institution is wealthy. If everybody is impoverished, it will have a value of -1 because it's set up with one group minus the other group divided by the total population.

KAO: Yeah.

KRIEGER: The value of that is that unlike a measure that's just of poverty or just of wealth, which only tells you, doesn't— So, if I tell you that this is an area that these people are poor, 20 percent are poor, you have no idea what it says about the remaining 80 percent. They could all be just near the poverty line, or they could be like really, really affluent. Similarly, if I tell you that an area has 20 percent of people that are really wealthy, it doesn't tell you about who the other 80 percent are. Are they all people that are fairly high income, or are any of them impoverished? So, what this measure does, it allows you to look at the spatial polarization that's social and to see how much people are in one extreme or the other.

What I did was to extend that work, to apply it to not only race in terms of you could look at the proportion that are White, proportion that are Black or Latins or Asian Pacific Islander, whichever groups you want. But also, and this is the innovation, is to make a measure of racialized economic segregation. Because all too often in this country, what happens is people either talk about quote-unquote "race," or they talk about class. And they have a very hard time putting these two together, let alone with gender, sexuality, or anything else.

KAO: Yeah.

KRIEGER: And so, what the ICE for racialized economic segregation does is it asks you to think about an area in terms of how much of it is concentrated either in White, affluent households or say, in Black, low-income households or low-income households of people of color. And what this does is it keeps both groups literally on the map. And it becomes a very powerful measure to use that tells you more than just poverty and more than just income and more than just racial-ethnic composition. And frankly, there wasn't a measure that was quite like that before.

And the other value of it, which is really important, is that it can be used at many levels of geography. It can be used at the census tract. It can be used at the block group. It can be used at the county and the state. Things like many of the other measures of residential segregation, for example, only get used at the city level because they have to look at how much you move, like the Dissimilarity Index, how much you have to move people around, the different little subunits in the city to get that. But what that means is that you only end up with city-level estimates, which are what's typically used for a lot of the segregation studies.

But what we've shown is that if you include city-level data and census tract-level data, the census tract-level data pack a bigger punch. So, you're underestimating the impact of segregation on health if you're only looking at city-level variables. So, there's a lot there.

But the point is, is that the value of this particular measure is it makes you think about groups in relationship to each other. Just as in the case, you can't have rich without poor. [chuckles] You can't have White with Black. You can't have men without women, let alone non-binary. Groups are codefined in relationship to each other. They're not essential things unto themselves.

KAO: Yeah.

KRIEGER: That's what this measure helps keep in the forefront.

KAO: So, as you just alluded, these and other measures are ways that, for example, local public health agencies can use to surveil and monitor population health disparities in their jurisdictions.

KRIEGER: Yes.

KAO: That said, most state and local public health agencies are inadequately funded. One example is the more than 20-year moratorium on federal funding into gun violence. And according to a 2017 study, the number of publications about gun violence declined 64 percent from 1998 to 2012. And while that number of publications picked up through 2014, it's estimated that there are no more than 20 full-time gun violence researchers in this country. While Congress recently approved \$25 million for gun violence research, public health funding remains woefully inadequate.

So, while scientific research is not generally seen or considered to be political advocacy, how should public health researchers and practitioners go about advocating for needed funding to support public health research and infrastructure?

KRIEGER: So, again, you have a lot packed into that question. And I think first, it's really important to say that scientific research is not by itself advocacy. People advocate. And when you do research, you always have to think about the strengths and limitations. You frame your hypotheses. You test them. You don't just get to assert opinions. And you certainly do not get to cherry pick the evidence. And I certainly have published studies, for example, which didn't have the findings that I expected, which leads to lots of introspection. You always have to rule out error because error can always happen. And so, did you make a mistake, which would be really bad, [chuckles] or is there a new finding here that something happened that is different than what you expected? So, those are the kinds of views.

And it's really important that if you want your science to be used for advocacy, it had best be as rigorous as it can be.

KAO: Yeah.

KRIEGER: Because no one is helped by good science, and certainly no one is helped by ignoring or denying science. That's even worse. So, I want to be really clear that the science really means that you're doing public, transparent research—transparent about the ideas, the data, the methods—and that anyone can test it. These are not personal, private opinions. It's meant to be testable knowledge. That's where the replication comes in. That's so important. And if things work here and don't work, is it because, again, there's an error or because there's something really different that's really important to understand? There's a lot on transportability in terms of understanding that.

That said, you can ask your questions based on things that you think that would be useful to know about the world: to know about what might affect rates of violence, to know about what might affect rates of suicide to know what might affect these things. Because they are questions that come from the world. People want to know the answers, and you might be one of those people as well. And how do you answer those questions as rigorously as possible?

KAO: Yeah.

KRIEGER: So, you do need funding for that because, again, data don't fall out of the sky. Somebody has to pay for it. I mean, people think they grab stuff off the Internet, but that comes from somewhere. Somehow those data have been tabulated, collected, gathered, interpreted, and combined.

So, what it means is that public health in general has been incredibly underfunded. I mean, it's never recovered from the 2008 economic recovery. It's not been valued. We see the impact of that in what's happening with the response to the COVID pandemic. Separate from any of the politics of that, just the flat out lack of capacity is really, really worrisome. So, yes, there's a lot that needs to happen. And it's not only in relation to gun violence.

I think the last point to bring out is that there's a time disgraced tradition of basically trying to have no data, no problem. And what that is, is that when people in power do not want there to be, and something is contributing to their power but is causing other people harm, they generally try to suppress it. This has a very long history behind it. And it's why you see the incredible assaults right now on, for example, environmental and public health regulations and protection. Because when you show harm, and particularly when you show embodied harm in people, it opens you up to liability and accountability.

And so, if you think about the cue and cry right now, for example, about the lack of racial-ethnic data, let alone socioeconomic data, which hardly anyone's still talking about with regard to COVID-19, this is part of a pattern. It's not surprising. It's wrong. But what you need to understand is data are powerful. And again, not to cherry pick the data and to spin a story. That is, if you're doing the science, that's not what you do. If you're doing the advocacy work, you may selectively emphasize parts of the story or not. But that's not the science. That's a different part of very practical, absolutely necessary work to make things better for the people's health.

KAO: Yeah, no. I think, again, you make some powerful points. If I can just loop back to something you said earlier in our conversation. You mentioned that nobody disputes that health care policy is health policy. But frankly, educational policy is also health policy. Tax policy is health policy. Criminal justice policy is health policy. How should clinical medicine and public health better work together to advance the well-being of individuals and populations, given this larger lens that I just described?

KRIEGER: So, one thing I think is really important is to be careful about having health be the ultimate arbiter, while at the same time knowing that health really matters. So, there's lots about education that may have nothing to do with health. And then there are things that really do have to do with health. There are things about transportation that don't have to do with health, and then they do have to do with health. Is there a conversation going on similarly with housing, whereby the different disciplinary insights and the different insights of the fields can come together in a way that's synergistic, where each benefits from the

other, where we in public health can bring in, for example, that sense of what different things mean for people's health while also learning about the parts that we may not even be aware of in terms of what some of the policy issues are or the resource issues are.

So, to me, it's a two-way engagement. It's not that it should all become health policy because they have their real job to do. And it comes up a lot. I, as a public health person, I can help document what some of the problems are, and I can help document whether changes in policies make a difference for health.

But for example, on the questions right now that are best related to what are the different methods that people are seeking in their reform, for example, of policing, what you can do is you can show something seemed to have had no effect at all, like body cams and what happens, and others begin to maybe have effects. So, it's really important to bring those together. But to have a frame of health in all policies and health equity in all policies is useful in terms of reminding everyone that everything ultimately will be affecting health. The question is how. And what is salubrious and is promoting of health equity matters to think about, too, as well as what is injuring health.

And I think also what's interesting is that because you also have to think about people being the ones that are responding. You know, there's been interesting discussions among people that are working on climate crisis and climate justice that bringing in the human health dimensions has caught the attention of some groups that otherwise would not have paid attention. Now, is it right to have everything be so anthropocentric? No, because we're just one species among many on this planet, and there's many that have lived on this planet way longer than ever before Homo sapiens even showed up on the scene. However, we've changed the terms of life for all. So, no, it's not good to be purely anthropocentric in thinking. On the other hand, from a policy standpoint, people really do pay attention when you start.

And it's not just that; it's that people also have—although this isn't entirely beginning to change—they have the capacity to sue, and they have the capacity to plead things in court. I mean, yes, there is a river now in New Zealand that has rights for legal standing in court. But this is the exception, not the rule right now. So, I think one needs to think about it in those ways as well. Who has a claim that can make good on that around injury that makes a difference in litigation and policy?

KAO: Yeah.

KRIEGER: And health is crucial in all of that.

KAO: Yeah. No, I appreciate your points. So, as we near the end of our conversation, you've already alluded to much of your work and how it relates to the current public health threat. But I'd like to get your final thoughts about how your work can help all of us better think about and approach the current pandemic and its disproportionate impact on those among us who not so long ago were not considered quote-unquote "essential" in our society.

KRIEGER: Well, that's again, it's like the same statement I alluded to earlier about the framing of saying slavery is a necessary evil. Necessary for whom? So, this essential is, people have been essential all along, whether they have been valued by those who pay them. That's another question entirely. And what this pandemic has shown is that people who are essential workers, which is actually the bulk of people who work in the United

States, by the way, I mean, it's a small percent that are able to stay at home and do their work. And that's enabled in part by the technologies now of who can do work on the computer, for example, only, as opposed to physically moving about in time and space and manipulating objects.

And so, what happens is that what the pandemic has exposed is, it's in effect pulling the thread on inequities that've been long known, but it just ties them all together. Because again, we embody it all. Our bodies don't decide that this is a housing problem one day; this is a transportation problem another day. This is a workplace problem still another day. Because we live it all simultaneously. We're always integrating. That's the theme of embodiment.

So, what this pandemic has shown is a, whose work is truly essential in that kind of way, b, that exposure matters. I mean, I think one of the things in terms of understanding the gross racial-ethnic inequities, we're just about, we have a new working paper out that's showing, for example, that the age-specific mortality rates are way higher in working-age adults for Black and Latinx and American Indian against the White non-Hispanic population. Whereas if you look at just the -standardized rate, which is weighted towards older populations, you don't see the extremes quite as much. You still see the, but not as much.

KAO: Yeah.

KRIEGER: People have to be exposed. And so, what this means is orient to how do you stop people from being exposed? Well, where are they being exposed? Well, the primary places people are being exposed is at work, is potentially going to and from work. It depends on the modes of transportation and what's available. And then there's also the question of who's living in crowded housing. And crowded housing is a function of lack of living wage and lack of affordable housing.

And so, I mean, we've done the work both at all counties in the U.S., but also looking among the first to do that and to point to the importance of the crowded housing. And crowded really means crowded. And when you look at U.S. Census data, crowded means more than one person per room, basically not counting the bathroom. So, if you have an apartment that has one bedroom, one kitchen, and one living room or dining room, that's three rooms. That would only be considered crowded if four or more people were living there.

KAO: Huh.

KRIEGER: Which is crowded.

KAO: [chucking] Right.

KRIEGER: So, it's really important to say that what our work is showing is what those things are. And it takes away some of the emphasis from people saying, "Well, no, it's because people have pre-existing chronic conditions." Well, those pre-existing conditions are pre-existing inequities. There is so much work on why there are differential rates of chronic diseases, particularly cardiovascular, diabetes, cardiometabolic, etc., that are happening among people who live in areas and are parts of communities that have been underserved and underinvested and subjected to different kinds of discrimination, particularly racial. And so, that's given, but it can't explain.

Because we're seeing mortality rate ratios, for example, in the younger ages that are seven to nine times higher. And the highest you would get from racial-ethnic differences in, for example, diabetes mortality or heart disease mortality is going to be around two to three, and those are really big. And we're seeing things way higher. So, there's no way it's going to be explained just by pre-existing conditions, so-called. So, what I think the work is pointing to, it raises the question, what's going on around prevention?

It's really telling that in this time, particularly because of the undermining of not only public health, but within that, OSHA, under this particular administration, there's been only one citation. We're analyzing a database that OSHA has put up closed and open complaints that has 14,000 complaints, citations.

KAO: Mm.

KRIEGER: So, I think it's really important to be asking those questions about the conditions of work, the policies at work. And the policies are about the physical biophysical conditions at work, how close people are, what the physical processes are they're doing. But they're also about the social policies. Who has sick leave?

KAO: Yeah.

KRIEGER: How is that enforced, etc., etc.? So, I think that the kind of work that I'm doing helps bring all of that to light in ways that is useful to push about what kinds of data are needed, particularly for local areas, to understand what's going on with the pandemic and what that means, again, for prevention.

KAO: Yeah. Well, I wish we had more time, but unfortunately, we don't. I want to thank Dr Krieger for sharing her deep expertise and insights with our audience today. Dr Krieger, thank you for being a guest on *Ethics Talk*.

KRIEGER: Thank you very much for having me.

KAO: For more COVID ethics resources, please visit the *AMA Journal of Ethics* at JournalofEthics.org. And to our viewing audience out there, the Latin root for the word "conscience" means "with knowledge." I encourage everyone to do the right thing and act and advocate in accordance with the best of the available public health evidence because lives and livelihoods during and after this pandemic depend on it. Be safe and be well. We'll see you next time on *Ethics Talk*. [bright theme music plays]