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# Measures of Racism, Sexism, Heterosexism, and Gender Binarism for Health Equity Research: From Structural Injustice to Embodied Harm—An Ecosocial Analysis

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## Keywords

gender identity, health equity, heterosexism, racism, sexism, structural injustice

## Abstract

Racism. Sexism. Heterosexism. Gender binarism. Together, they comprise intimately harmful, distinct, and entangled societal systems of self-serving domination and privilege that structure the embodiment of health inequities. Guided by the ecosocial theory of disease distribution, I synthesize key features of the specified "isms" and provide a measurement schema, informed by research from both the Global North and the Global South. Metrics discussed include (*a*) structural, including explicit rules and laws, nonexplicit rules and laws, and area-based or institutional nonrule measures; and (*b*) individual-level (exposures and internalized) measures, including explicit self-report, implicit, and experimental. Recommendations include (*a*) expanding the use of structural measures to extend beyond the current primary emphasis on psychosocial individual-level measures; (*b*) analyzing exposure in relation to both life course and historical generation; (*c*) developing measures of anti-isms; and (*d*) developing terrestrially grounded measures that can reveal links between the structural drivers of unjust isms and their toll on environmental degradation, climate change, and health inequities.

## INTRODUCTION

Racism. Sexism. Heterosexism. Gender binarism. Each of these seemingly abstract terms encompasses very real and intimately harmful and distinct societal systems of self-serving domination and privilege (13, 67, 74) that are created by people and structure health inequities (99)—that is, unjust, unnecessary, and preventable differences in health status between social groups (26, 194). Accounting for the avoidable and inequitable suffering these "isms" cause requires measures of exposure that are attuned to (*a*) the explicit and tacit rules that codefine the social groups at issue and the polarities of superior/inferior and normal/deviant they encompass and (*b*) clarifying not only who is harmed but who gains, socially and materially, from these divisions (13, 99). It also requires challenging biological essentialism and situating human power relations in the larger context of life on Earth (57, 61, 65, 97, 117).

These may appear to be obvious statements. However, prior to the 1990s, only scant research measured the impact of discrimination and health, and research conducted since then, largely in the Global North, has chiefly used individual-level measures of self-reported experiences of discrimination (91, 99, 157, 196) (**Supplemental Table 1**). Only in the past 10 years has a body of research emerged regarding the health impact of what variously is referred to as structural or institutional discrimination (8, 58, 77, 99, 196), albeit using a confusing welter of heterogeneous social metrics. Only a small fraction of this work has addressed environmental racism (43, 182); even less has focused on global climate change (57, 162) (**Supplemental Table 1**).

Supplemental Material >

Accordingly, in this review I focus first on first principles for thinking through what measuring isms entails—whether for the isms I was invited to address or those beyond the scope of this review—and why this can vary, not only across different types of injustice and in different societal contexts, but also over time, depending on advances and setbacks in collective efforts to build equitable societies. Drawing on the ecosocial theory of disease distribution (91, 93, 97), I synthesize key features of these isms (**Table 1**) and provide a measurement schema (**Table 2**), which together inform my discussion of concrete examples of such research from the Global North and the Global South (**Table 3**). My sources include both literature I have engaged with during the past 35 years as a US social epidemiologist (90–99, 109) and new material I have reviewed for this article (see search terms in **Supplemental Table 2**). As shown in the examples below, the availability of apt measures—and, more often, their absence—means that there is a grave need for better work worldwide to improve the conceptual and methodological rigor, as well as the scope and inclusiveness, of these much-needed metrics.

## ON ISMS AND HEALTH EQUITY: CONCEPTS AND KEY CONSIDERATIONS

### All Isms Combine Belief and Action, but Not All Involve Injustice

The first point is that isms are not things. The term "ism" is a suffix that forms nouns of action (153). Sometimes the action involved occurs without human agency, as in the case of "magnetism" (153). More commonly, however, an ism is a connected system of ideas, beliefs, and practices conceived by people with purpose in mind (153). Providing guidance for action, isms can be religious, ecclesiastical, philosophical, political, or social and can variously be articulated through explicit institutions or via doctrines or principles that are not institutionally based, per se (153). Familiar examples listed in the Oxford English Dictionary (OED) include, for the former, "*Buddhism*, *Calvinism*, *Catholicism*,. . .*Conservatism*, *Epicureanism*, *Judaism*,. . .*Liberalism*. . .*Platonism*, *Positivism*, *Presbyterianism*, *Protestantism*, *Puritanism*,. . .*Quakerism*. . .*Taoism*. . .*Whiggism*" (153, italics in original); illustrating the latter is a fascinating list encompassing "*agnosticism*, *altruism*, *animism*, *atheism*,

**Table 1 Key specific and shared features of unjust isms: core beliefs about targeted versus privileged groups, biology, and health status—and contrasting views of challenging anti-isms**

| Feature | Racism | Sexism | Heterosexism | Gender binarism |
|---|---|---|---|---|
| Fallacious unjust premise(s) | Racial supremacy is a natural fact<br>Humans are biologically divided into discrete "races"<br>Some "races" are biologically superior<br>The remaining "races" are biologically inferior<br>Biological superiority sets the basis for political, economic, social, and cultural supremacy | Male supremacy is a natural fact<br>The status and roles of men and women (and boys and girls) naturally follow from differences in their biology due to being different biological sexes | Heterosexuality is the only natural sexual orientation<br>Same-sex desire, behavior, and identity are unnatural (and, by extension, deviant and immoral) | Gender identity that conforms to biological sex at birth is the only natural gender identity<br>Nonconforming gender identities are unnatural (and, by extension, deviant) |
| Privileged group | "Superior race(s)"<br>Usually, but not always, defined as "white," because designation depends on societal context<br>Typically reflects histories of conquest and establishment of political regimes and economies dependent on both the enslavement of others and settler-colonialism | Men and boys | Heterosexuals | Cisgender persons who conform to their society's dominant gender norms |
| Targeted group | "Inferior race(s)"<br>Usually, but not always, groups defined as "black," and also "Indigenous," because designation depends on societal context<br>Typically reflects histories of invasion, enslavement, and settler-colonialism | Women and girls | Persons who self-identify as or are categorized as lesbian, gay, bisexual, or queer (with terminology varying by societal context) | Persons who self-identify as or are categorized as transgender, gender fluid, or genderqueer, with terminology varying by societal context and language (e.g., hijra in India, muxes in Mexico, and travesties in South America) |
| Supporting beliefs and institutional ideologies | White supremacy<br>"Blood" ("race"-based) nationalism<br>Religious fundamentalism | Misogyny<br>Religious fundamentalism | Homophobia<br>Religious fundamentalism | Transphobia<br>Religious fundamentalism |
| Reliance on biological essentialism | "Biological race" treated as an essential natural category | Biological sex treated as a strictly binary category whose natural binary expression is heterosexual, cisgender, and gender-conforming | | |
| Erroneous beliefs regarding group's health status | Observed differences in health status between targeted and privileged groups fundamentally driven by innate (and presumed genetic) biological differences health, including presumed inferior or deviant biology of the targeted group | | | |

(*Continued*)

**Table 1** (*Continued*)

| Feature | Racism | Sexism | Heterosexism | Gender binarism |
|---|---|---|---|---|
| Supporting structures and practices (for each type of unjust isms) | **Structural:** explicit and nonexplicit unjust "rules of the game" (laws, policies, and rules), as well as area-based or institutional legacies and indicators of injustice<br>**Interpersonal:** discriminatory practices and beliefs directed at persons in the targeted social group by persons in the privileged social group<br>**Internalized:** self-subordinating practices and beliefs by persons in the targeted social groups | | | |
| Links to political economy, political sociology, and political ecology | How does the privileged group benefit economically, and how is the targeted group harmed economically, by the unjust ism?<br>How does the privileged group benefit socially from, and how is the targeted group socially harmed by, the unjust ism?<br>How is the biophysical ecological context of the privileged group protected, and how is that of the targeted group harmed, by the unjust ism? | | | |
| Contrasting views of anti-isms | Rejection of biological essentialism and claims of biologically based superiority or inferiority<br>Rejection of definitions of social normality or deviance based on biological essentialism<br>Respect for human rights: recognition of "the inherent dignity and of the equal and inalienable rights of all members of the human family" (186) and that the abrogation of dignity and denial of these rights both constitutes injustice and can produce health inequities<br>Recognition (to varying degrees, as informed by insights from political sociology, political economy, and political ecology) that unjust societal "rules of the game" are established by people in the privileged group with private vested interests in preserving, if not expanding, their power, privilege, property, and resources, primarily at the expense of those in the targeted group(s) | | | |

*bimetallism*, *deism*, *egoism*, *egotism*, *empiricism*, *evangelism*, *fanaticism*, *feminism*, *heathenism*, *hedonism*, *idealism*, *imperialism*, *jingoism*, *libertinism*, *monarchism*, *naturalism*, *opportunism*, *pædobaptism*, *paganism*, *polytheism*, *realism*, *romanticism*, *sansculottism*, *scepticism*, *stoicism*, *theism*, *universalism*" (153, italics in original).

Nothing about isms requires that they involve injustice. However, directly relevant to this review, in 2004 the OED included two new draft additions to their definition of isms (153):

> a. Forming nouns with the sense 'belief in the superiority of one—over another'; as *racism*, *sexism*, *speciesism*, etc.
> b. Forming nouns with the sense 'discrimination or prejudice against on the basis of—'; as *ageism*, *bodyism*, *heightism*, *faceism*, *lookism*, *sizeism*, *weightism*, etc.

These sets of isms likewise provide guidance for action, in this case, unjust practices variously implemented by states, nonstate institutions, and individuals within their societal contexts.

**Table 1** accordingly presents features of the isms addressed in this article in relation to health inequities. At issue is how the specified forms of unjust treatment structure exposure to which types of harmful biophysical and social phenomena, at what point in the life course, with which kinds of etiologic periods, and with what potential for intergenerational harm.

## Tenets Relevant to Analyzing Isms and Health Inequities: Ecosocial Theory of Disease Distribution

The second point is that much as isms involving injustice are about beliefs, they are fundamentally rooted in real-world material conflicts over power and property (13, 67, 74)—as tied to the workings of diverse political economy isms, e.g., capitalism (including neoliberalism), socialism,

**Table 2 Schema of types of measures of unjust isms, and anti-isms, for health equity research and implications for study design**

| Exposure to ism: level | Type of measure | Example of metric | Study design considerations (for all types of measures) |
|---|---|---|---|
| Structural | Explicit "rules of the game": unjust laws, policies, and rules | **Unjust ism:** laws, policies, and rules that explicitly discriminate adversely against the targeted group and privilege the dominant group<br>**Anti-ism:** laws, policies, and rules that explicitly prohibit adverse discrimination or support positive discrimination (affirmative action and benchmarks for equity; reparations) | **COMPARISON GROUPS**<br>**Structural:** Requires comparative analyses in relation to the ruling polities or institutions:<br>■ Temporal (longitudinal), within one polity or institution: compare health status of targeted group, or magnitude of health inequity between privileged versus targeted group, before versus after enactment, or repeal, of inequitable law or policy<br>■ Across polities or institutions: compare health status of targeted versus privileged group in settings with and without the specified laws or policies<br>**Individual** (for exposure to ism and also internalized ism), relevant comparisons:<br>■ Within targeted group (to quantify variation in extent of exposure within targeted group and its health impact)<br>■ Between targeted and privileged group (to quantify how exposure contributes to health inequities between the targeted and privileged group)<br><br>**TEMPORAL ISSUES**<br>**Structural:** differing timeframes: (*a*) long-term impact of historical injustice due to unjust isms; (*b*) contemporary impact of current injustice due to unjust isms<br>**Individual:** impact of exposure to unjust isms and their internalization across the life course, including intergenerational exposures and internalization<br>**Etiologic period:** need to account for time required to develop health outcome, given exposure<br><br>**AVAILABILITY AND VALIDITY OF EXPOSURE DATA**<br>**Structural:** laws, policies, and rules may not be public or readily accessible, and data on their enforcement may be unobtainable<br>**Individual** (for exposure to ism and also internalized ism): self-report data reflect only what people are willing or able to say about what they have consciously experienced, and responses may be biased by social desirability, discomfort, or fear; implicit measures may reveal underlying sense of self and group as the targeted group but do not provide data on context of exposure; experimental scenarios can reveal biological mechanisms but may not yield effect estimates generalizable to real-world contexts |
| | Nonexplicit "rules of the game": unjust laws, policies, and rules | **Unjust ism:** laws, policies, and rules that are intentionally designed to evade antidiscrimination laws in order to effectively, but not explicitly, discriminate against the targeted group and to privilege the dominant group<br>**Anti-ism:** laws, policies, and rules that prevent nonexplicit discrimination against the targeted group | |
| | Area-based or institutional legacies and indicators of injustice | **Unjust ism:**<br>Differences in social outcomes across targeted versus privileged group<br>Population-based data on attitudes and beliefs in support of unjust ism (explicit surveys; Internet)<br>Audit studies of institutional or public practices expressing the unjust ism<br>Presence of public monuments and commemorations supporting unjust ism<br>**Anti-ism:** same approaches as for unjust ism but in relation to support for anti-ism | |
| Individual | Explicit self-report<br>Implicit measurement<br>Experimental | **Unjust ism:** explicit survey questions, or implicit association tests (IATs), or experimental scenarios involving exposure to unjust isms<br>**Anti-ism:** same approaches as for unjust ism but in relation to exposure to anti-ism | |
| Internalized | Explicit self-report<br>Implicit measurement | **Unjust ism:** explicit survey questions, or IATs, or experimental scenarios involving internalization of unjust isms<br>**Anti-ism:** same approaches as for unjust ism, but in relation to internalization of anti-ism | |

**Table 3 Health equity research: illustrations of measures of isms, and anti-isms, for racism, sexism, heterosexism, and gender binarism, by level[a]**

| Level | Metric | Selected examples of measures used in health equity research[b] |
|---|---|---|
| **Structural** | Explicit "rules of the game": laws, policies, and rules | **Racism**<br>■ Measures of one US state-level 1960s civil rights measures in relation to infant mortality (2)<br>■ National measures of US states' Jim Crow status (legal racial discrimination) and its mid-1960s abolition in relation to concurrent and subsequent infant death rates (101), premature mortality (102), and breast cancer estrogen receptor status (106, 107)<br>■ US federal policies requiring racial discrimination in neighborhood development and home ownership loans ["redlining"; 1930s to mid-1960s (170)] in relation to current rates of within-city urban violence (79), self-rated health (130), cancer stage at diagnosis (N. Krieger, E. Wright, J.T. Chen, P.D. Waterman, E.R. Huntley, M. Arcaya, under review), and preterm birth (N. Krieger, G. Van Wye, M. Huynh, P.D. Waterman, G. Maduro, W. Li, R.C. Gwynn, O. Barbot, M.T. Bassett, under review)<br>**Sexism**<br>■ National measures of women's legal rights in relation to food security in 42 low- and middle-income countries (20)<br>■ National measures of women's land rights in rural China in relation to domestic violence (177)<br>■ National measures of women's legal economic rights in 90 less-developed nations in relation to malaria rates (7)<br>■ National measures of 12 social investment policies in 11 European welfare states in relation to gender equity in morbidity and mortality outcomes (15)<br>■ State-level measures of women's suffrage in the United States (1869–1920, prior to the 1920 passage of the national constitutional right for women to vote) in relation to child survival (138)<br>**Heterosexism and gender binarism[c]**<br>■ US state-level measures of nondiscrimination LGBT legislation in relation to sexual minority women's satisfaction with health care providers (9)<br>■ US state-level bans on same-sex marriage and psychiatric disorders in LGB populations (73)<br>■ US state-level transgender policies in relation to transgender health (50)<br>■ National gender identity law in relation to health of Argentinean transgender women (5) |
| | Nonexplicit "rules of the games": laws, policies, and rules | **Racism**<br>■ US state-level measures of gerrymandering (partisan manipulation of voting district boundaries without using explicitly racial criteria) and proximity of populations of color to US Superfund sites (high-hazard toxic waste sites) (88)<br>■ Algorithms for dementia status in relation to differential accuracy by race/ethnicity in a US nationally representative data set (60)<br>**Sexism**<br>■ Local measures of publicly available toilets (including urinals) by gender across public sites (airports, train stations, shopping centers) in four cities in South Africa (179)<br>■ National measures of work-hour thresholds (no explicit mention of gender) and gender inequities in mental health in Australia (48)<br>**Heterosexism and gender binarism[c]**<br>■ National study of noninclusion of questions about sexual orientation and gender identity in health surveillance data in the United States (159) |

(*Continued*)

**Table 3 (*Continued*)**

| Level | Metric | Selected examples of measures used in health equity research[b] |
|---|---|---|
| | Area-based or institutional legacies and indicators of injustice | **Note:** The predominant area-based metrics for unjust isms used in health equity research pertain to city-level measures of residential racial segregation (99, 192, 196); new metrics for spatial polarization enable the use of more granular multilevel measures of racial, economic, and racialized economic segregation (108, 112, 115). The examples provided below are in addition to measures of residential segregation.<br>**Racism**<br>■ Local measures of inequitable spatial distributions, by race/ethnicity, of US neighborhood hazards, e.g., warehouses (in the Los Angeles combined statistical area) (202)<br>■ Indices of US county- and state-level measures of black versus white differences in diverse social and economic indicators in relation to birth outcomes (39, 189), fatal police shootings (134), and myocardial infarction (125)<br>■ Area-based US Internet data in relation to infant health outcomes, e.g., using Internet data on hate speech (36) or implicit bias surveys (137, 152)<br>**Sexism**<br>■ Indices of national measures of the gender ratio (women:men) for diverse social and political indicators in relation to femicide rates in 61 countries (156)<br>■ Measures of gender inequality in (*a*) political representation in US state legislatures, (*b*) earnings, labor force participation, and poverty rates, along with data on (*c*) percent of state population composed of religious conservatives and (*d*) percent of women who live in a county without an abortion provider, in relation to chronic health conditions, self-rated health, and physical functioning (77)<br>■ National measures of women's representation in a country's parliament and mortality rates across 155 countries (126)<br>**Heterosexism and gender binarism**[c]<br>■ National measure of voting results for a plebiscite on same-sex marriage in relation to mental health among the LGB population in Australia (163)<br>■ US community data on explicit and implicit HIV prejudice in relation to the psychological and physical well-being of people with HIV, in 42 communities in New England (137) |
| Individual: exposure to ism | Explicit self-report | **Racism**<br>**Note:** Individual self-reports of exposure are the most widely used measures in research on racial discrimination and health (behavioral, mental, and physical) (99, 121, 157, 196). The reviews and examples listed below are chosen to illustrate the current use of such measures worldwide.<br>■ Reviews of national and community-based population self-report data on exposure to racial discrimination (as target or witness) in relation to diverse health outcomes among diverse US populations of color and racialized populations in other countries (12, 89, 99, 157, 158, 196).<br>■ National and community-based population self-report data in studies on racial, ethnic, and caste discrimination in relation to health status and health behaviors, respectively, in Brazil (160), Europe (46), Israel (45), India (84), and New Zealand (72)<br>**Sexism**<br>**Note:** Individual self-report data are the most widely used measures in worldwide research on sexism and health, albeit primarily in relation to gender-based violence, which sometimes includes sexual harassment (86, 133, 188). The examples listed below are chosen to illustrate current health equity studies, which employ less commonly used measures of gender discrimination and sexism and which also focus explicitly on sexual harassment. |

(*Continued*)

**Table 3 (*Continued*)**

| Level | Metric | Selected examples of measures used in health equity research[b] |
|---|---|---|
| | | ■ Self-report data on gender discrimination and women's drug use in the United States (32)<br>■ Self-report data on sexist ideology and men's control over women's reproductive health decisions in the United States (164)<br>■ Self-report data on US women's experiences of sexism and sexual risk behaviors (41)<br>■ Self-report data on sexual harassment and measured physical health in the United States (103, 183) and self-rated health and self-reported psychological health in the United States (28, 71) and globally (40)<br>■ Self-report data on gender equality in couples in relation to self-rated health in Sweden (178)<br>**Heterosexism and gender binarism[c]**<br>**Note:** Individual self-report data are the most widely used measures in worldwide research on anti-LGBT discrimination and health (behavioral, mental, and physical) (141, 142). The examples listed below are chosen to illustrate the current use of such measures.<br>■ Self-report data on hate crime victimization among LGBT persons in the United States and mental health (29)<br>■ Self-report data on bisexual-specific stressors in relation to psychological distress and suicidality in the United States (131)<br>■ Self-report data on acquisition of gender-affirming identity documents for US transgender persons and smoking status (175) |
| | Implicit | **Note:** Only four published health equity studies appear to have used the IAT to assess people's sense of themselves as targets versus perpetrators of racial discrimination (33, 100, 113, 114), one of which also tested an IAT for being a target versus perpetrator of gender discrimination (33); these measures were associated with smoking status and measured blood pressure (100, 114) |
| | Experimental | **Racism**<br>■ Experimental manipulation, in US studies, of exposure to racial discrimination versus nonracial stressors (e.g., using visual vignettes, written materials, or confederates), analyzed in relation to measured blood pressure, cardiovascular reactivity, and cortisol levels (6, 76, 78, 119, 171)<br>**Sexism**<br>■ Experimental manipulation, in US studies, of exposure to sexism (e.g., using confederates and written materials), analyzed in relation to cortisol levels and cardiovascular reactivity (51, 185)<br>**Heterosexism and gender binarism[c]**<br>■ No experimental health equity studies identified |
| Individual: internalization | Explicit | **Racism**<br>■ Self-report data on internalized negative racial group attitudes in relation to cardiovascular disease among African American men (37)<br>■ Self-report data on internalized racism and mental health among African Americans, US-born Caribbean blacks, and foreign-born Caribbean blacks in the United States (143)<br>**Sexism**<br>■ No health equity studies identified<br>**Heterosexism and gender binarism[c]**<br>■ Self-report data on internalized heterosexism or homophobia in relation to mental and physical health in the United States (132, 166, 180) |

(*Continued*)

**Table 3** (*Continued*)

| Level | Metric | Selected examples of measures used in health equity research[b] |
|---|---|---|
| | | ■ Self-report data on internalized gender minority stress and depressive symptoms among US transgender and gender nonconforming youth (42) and Swiss transgender adults (80)<br>■ Self-report data on internalized transphobia in relation to suicide attempts among transgender adults in Argentina (129) |
| | Implicit | **Note:** Only one published health equity study appears to have employed the IAT for implicit bias as a measure of internalized oppression, for internalized racial bias in relation to depression among African American men (38) |

Abbreviations: IAT, implicit association tests; LGBT, lesbian, gay, bisexual, transgender.

[a]For clarity, this table lists types of measures by level and type of ism, but specific studies can, and do, employ measures at multiple levels (for any given type of adverse ism) and can, and do, employ measures for multiple types of unjust isms.

[b]Detailed technical descriptions (including direct quotation, tables explaining construction of metrics, etc.) for the specific measures used in the cited studies are provided in **Supplemental Table 3**.

[c]In this table, the categories of "heterosexism" and "gender binarism" are considered together because studies on sexual and gender minorities (including lesbian, gay, bisexual, queer, transgender, and gender fluid persons) often include persons across this range of social categories, even as some studies may focus exclusively on transgender persons (regardless of sexual orientation) or solely on persons who identify as belonging to a sexual minority (regardless of gender identity).

Supplemental Material >

communism, feudalism, communitarism, etc. At issue are societal structures linking political governance, economic rules, and rules governing who is allowed which rights to live, produce, and reproduce (or not) where, in which community and family structures, and with which rights to use, own, and extract resources from which land, water, forests, and other species (13, 21, 57, 66, 67, 117, 162).

The ecosocial theory of disease distribution—which I first proposed in 1994 and have elaborated since—accordingly conceptualizes health inequities in relation to power, levels, life course, historical generation, biology, and ecosystems (91, 93, 95–97) (**Figure 1**). Its four core conjoined constructs pertain to (*a*) embodiment; (*b*) pathways of embodiment; (*c*) cumulative interplay of exposure, susceptibility, and resistance across the life course and across levels; and (*d*) accountability and agency. As the ecosocial construct of embodiment has clarified from the start (91, 95, 97), we jointly live our myriad legally and socially ascribed categories and identities, which notably can vary, among individuals, over time and by context (25, 86, 122, 151, 190). We are not a member of a particular racial/ethnic group one day, have a particular gender identity on another, and on still another day have a particular sexual orientation (whether identity, behavior, or desire)—and the same holds for our social class, immigration status, and where we live and work (91, 92, 95, 97, 109). Instead, we live embodied—and our bodies each and every day biologically integrate each and every type of unjust, and also beneficial, exposure encountered, at each and every level (96, 97). The construct of intersectionality, a term originating in the legal and social sciences (67, 74), similarly conveys the socially structured entanglement of multiple types of injustice, albeit without a focus on the pathways and processes of literal biological embodiment (91–99).

## Analyzing Isms Requires Engaging with Biology and Challenging Biological Essentialism

The third point is that, in accord with ecosocial theory (91, 97), a structural systems-oriented understanding of isms necessarily challenges two faulty premises of biological essentialism: (*a*) the spurious construct of biological race, which wrongly presumes humanity can be cleaved into

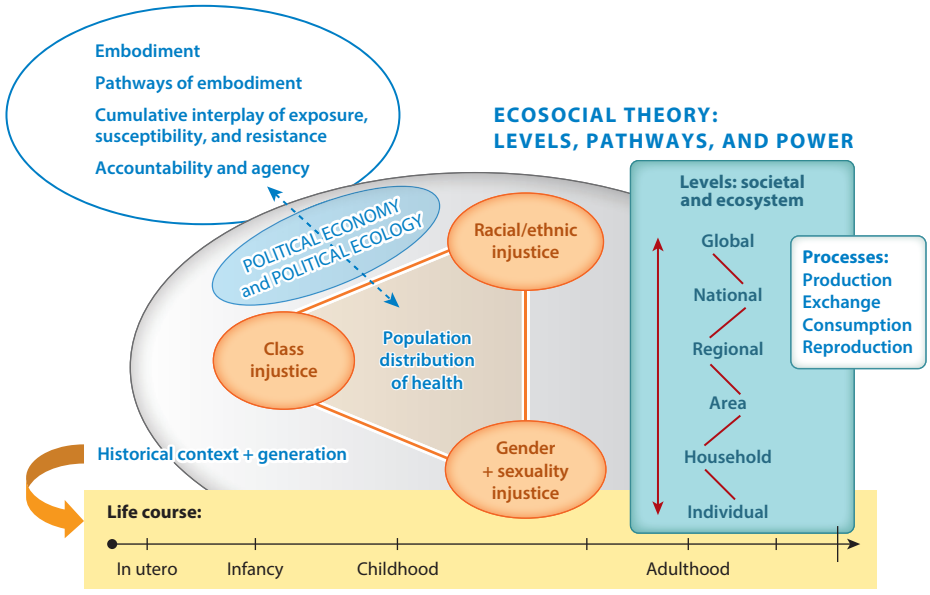



**Figure 1**

This figure schematically presents how the ecosocial theory of disease distribution conceptualizes the relationship between population distributions of health, levels, pathways, and power to clarify how health inequities constitute biological expressions of injustice. The ecosocial theory of disease distribution posits four conjoined core constructs (*white oval with blue outline*) (91–98): (*i*) embodiment; (*ii*) pathways of embodiment; (*iii*) cumulative interplay of exposure, susceptibility, and resistance; and (*iv*) accountability and agency. These constructs are fundamental to causal explication of population distributions of health. All of these constructs operate (*v*) across the life course, contextualized in relation to historical generation (i.e., birth cohort) (*yellow rectangle*) and (*vi*) across levels (*turquoise rectangle*), as mediated by (*vii*) the society's political economy and political ecology (*light blue oval*). For further explication of these concepts, please see the sidebar titled Core Constructs of Ecosocial Theory as well as the sidebar titled Pathways of Embodiment.

distinct biological "races" that intrinsically differ in health status and other traits (169, 203), including their human needs for rights and resources to thrive (49); and (*b*) the erroneous beliefs that gender and sexual orientation are fixed, binary, and biologically determined by sex-linked biology (54, 61, 86, 94, 161, 190). Also to contest are (*a*) conventional legal definitions that restrict "discrimination" to mean unfair treatment based on allegedly innate immutable and discrete characteristics, e.g., "race," "sex," or "sexual orientation" (3, 174) and (*b*) the conventional—and contradictory—causal inference suppositions that "race," "sex," and "sexual orientation" are either "unmodifiable" characteristics (and thus cannot be "causes") or else, unto themselves, are intrinsically the "causes" of health disparities (105). Rather, the very idea that these are fixed attributes that determine who people are—and at the same time are themselves causally sufficient to explain group differences in health (without reference to the causal perpetrators, both systemic and individual)—is part of the belief system of the very isms at issue. Notably, other forms of discrimination recognized and prohibited by law include discrimination on the basis of religious beliefs and political views (3), which, while potentially influenced by familial context, are surely neither innate nor immutable.

## Producing Knowledge for Action and Accountability, Not to Prove Injustice

The final point is that, to reiterate what I stated 20 years ago, the reason to study how injustice harms health is not to prove that injustice is wrong, since it is, by definition (92). Instead, the

## CORE CONSTRUCTS OF ECOSOCIAL THEORY

Embodiment refers to how we literally incorporate, biologically, the material (biophysical) and social world in which we live. The concept of pathways of embodiment refers to how processes of embodiment are shaped simultaneously by histories of societal arrangements of power and property and by constraints and possibilities of our evolved biology in ecological context, involving gene expression and not just gene frequency. Cumulative interplay of exposure, susceptibility, and resistance across the life course and across levels refers to the importance of timing and accumulation of, and responses to, embodied exposures, taking into account both individuals' life course social and biological development and the historical generation into which they have been born, as well as the levels at which both the exposures—and susceptibility and resistance to these exposures—are occurring (i.e., global, national, regional, area or group, household, individual). The concept of accountability and agency refers to both (*a*) the institutions and persons responsible for generating or perpetuating health inequities and (*b*) the public health researchers for the theories used to explain or ignore these injustices. Together, these conjoined constructs underscore why measures of isms must take into account (*a*) structural, legal, and policy contexts, as tied to changes in political and economic power (at different levels) to uphold or challenge the isms, and (*b*) timeframes of both exposures and their impacts, in relation to both the biophysical and social worlds and the relevant etiologic periods within and across generations.

## PATHWAYS OF EMBODIMENT

Pathways of embodiment especially relevant to exposure to unjust isms involve adverse exposures to (95–99) social and economic deprivation; exogenous hazards (e.g., toxic substances, pathogens, and hazardous conditions); social trauma (e.g., discrimination and other forms of mental, physical, and sexual trauma); targeted marketing of harmful commodities (e.g., tobacco, alcohol, other licit and illicit drugs); inadequate or degrading medical care; and degradation of ecosystems, including degradation linked to the alienation of Indigenous populations from their lands. These pathways, and multiple isms, occur—and are embodied—concurrently and interactively.

reasons are to deepen understanding of how injustice shapes population health, for whose benefit at whose expense; to contest narratives that naturalize inequities; and to generate evidence for accountability. After all, if people have created unjust societal systems and structures, so too can people challenge these systems and structures and advocate instead for human rights, health equity, and ecological sustainability (13, 21, 67, 74, 97, 155, 162, 181).

## OPERATIONALIZING ISMS FOR HEALTH EQUITY RESEARCH: A SCHEMA AND CONCRETE EXAMPLES

**Table 2** provides a schema for delineating different types of measures of the specified isms—and anti-isms—relevant for health equity research, with attention to issues of study design. Including anti-isms matters because, from the causal standpoint of inference to the best explanation (105, 124), if adverse isms are posited to drive health inequities, then anti-isms should aid health equity. **Table 3** in turns provides selected examples of health equity studies that have used such measures, at different levels, from both the Global South and the Global North; **Supplemental Table 3** provides the technical details of the metrics these studies employed.

Supplemental Material >

## Structural Measures: Isms and Anti-Isms

Supplemental Material >

The term structural—as applied to isms—has, in the past decade, begun to surface in a small but growing number of health equity studies (8, 14, 58, 77, 99, 196) (**Table 3**; **Supplemental Table 1**). "Structural" is meant to convey the "totality of ways" in which societies foster unjust isms through "mutually reinforcing systems" that can variously involve "housing, education, employment, earnings, benefits, credit, media, health care, and criminal justice" (8, p. 1453) and also marriage law, family law, identity documents, and property ownership (13, 21, 67). These laws, rules, and practices in turn "reinforce discriminatory beliefs, values, and distribution of resources" (8, p. 1453). Structural injustice thus exists above and beyond—while also shaping—unjust interpersonal interactions and individual beliefs aligning with the isms at issue (**Table 1**).

When it comes to the measurement of structural isms, however, more precision is required. Clarifying the different types and meanings of "structure" is crucial for accurate identification of etiology, accountability, and agency, and thus avenues for action.

**Explicit laws and rules.** One class of structural measures pertain to explicitly stated "rules of the game" (13, p. 11) (**Tables 2**, **3**; **Supplemental Table 3**). These rules can be articulated in explicit laws, policies, or algorithms, for which either government or nongovernmental institutions bear responsibility, thereby pointing to potential legal liability, claims for remedies or reparations, and alternative legislation (13, 181, 187). Well-known example include, in the United States, legally sanctioned white supremacy, black enslavement, and subsequent legal racial discrimination (i.e., Jim Crow laws) (1, 4, 56, 151); legal and genocidal "racial hygiene" in Nazi Germany (informed by U.S. Jim Crow laws) (56, 151); legal apartheid in South Africa (which also drew on U.S. Jim Crow laws) (56); the long-standing legal disenfranchisement of women in most countries around the world [women were first legally granted the right to vote, nationally, in New Zealand in 1893, and, most recently, in 2015, in Saudi Arabia, albeit only at the local level (184)]; national laws in 72 countries (as of 2017) that prohibit same-sex relationships (34); and a new US federal policy, under legal challenge, that prohibits transgender persons from enlisting in the military (123).

Two potential limitations involving these types of structural measures concern inadequate measure of exposure and also correlated exposures. First, health equity studies using these types of metrics typically focus on the presence of such rules; less attention, if any, is given to assessing whether or how these rules are (selectively) enforced, such that important variations in actual exposures may be overlooked (13, 66, 181). Second, health equity studies typically focus on rules for solely one type of ism, and while this approach may sometimes be warranted, often the ideological orientation of state policies means that rules for related adverse isms travel together (13, 35); a potential corrective could be inclusion, as covariates, of indices that capture multiple related policies (13, 35).

**Nonexplicit laws and rules.** Other times, the laws or rules deliberately do not name the targeted groups, e.g., because it is illegal to do so, but nevertheless discriminate adversely, by design or effect (**Tables 2**, **3**; **Supplemental Table 3**). Two classic examples from the United States, designed to target African Americans without the relevant laws naming this group explicitly, include (*a*) the War on Drugs (1, 75) and its links to mass incarceration, both of which have been a focus of health equity research (140, 195), and (*b*) voter suppression, whether by (now outlawed) poll taxes and literacy tests or by (still legal) partisan gerrymandering, restrictive voter ID laws, and limits on times and places to vote (4, 151), which by contrast has received scant attention in health equity research (88). A newer form of nonexplicit rule-based discrimination is discrimination-by-algorithm, whereby algorithms applied to biased data yield biased predictions, as has occurred with machine learning, big data, and institutional decisions regarding employment,

criminal sentencing, mortgage approval, and medical care (63, 148, 168). In both cases, the anti-ism measures needed to counter these types of injustice require explicit use of ism-conscious rules to protect the targeted groups (1, 4, 70, 148, 168, 187).

**Area-based or institutional nonrule measures.** Other measures appearing in the health equity research literature that are also referred to as structural do not directly assess actual rules (whether explicit or implicit), but instead comprise area-based or institutional measures regarding legacies and indicators of inferred rule-based structural injustice (**Tables 2**, **3**; **Supplemental Table 3**). Most commonly, such measures employ population-based data and quantify the difference (relative or absolute) between the targeted group and the privileged group in relation to one or more specified social outcomes, e.g., group differences in income, education, employment, home ownership, residential segregation, political representation, policing, mass incarceration, access to transportation, access to reproductive health services, proximity to toxic waste sites or polluting industries or facilities, etc. (**Tables 2**, **3**; **Supplemental Table 3**). The measures used, to date, in health equity research have been highly heterogeneous, rendering comparison of results across studies difficult. They also have thus far been limited by reliance on data that are publicly available and which can be stratified by the relevant social groups. Also potentially of interest, but not yet used in quantitative population-based health equity research, are area-based metrics for exposure to public monuments that support unjust isms (e.g., in the United States, monuments supporting the Confederacy) and also, as anti-isms, the removal of these monuments as well as their replacement by public art that exposes the unjust isms (23, 82, 136, 172).

Supplemental Material >

Additional area-based measures newly being used in health equity research seek to measure social norms regarding isms by employing survey or Internet data (**Tables 2**, **3**; **Supplemental Table 3**). Caution is required, however, given (*a*) well-known biases (especially underreporting) in self-report survey data on adverse discriminatory attitudes (10, 92, 99, 145, 154, 157) and (*b*) fast-rising fraudulent postings online, especially on hot-button isms, to foment political divisions (30, 148). An alternative approach, not subject to these biases but apparently not yet used in population-based health equity research, involves audit studies, i.e., investigations that send identical resumes—or identically dressed people of similar body build—to potential employers or landlords; in such studies, the applicants differ solely in their racial/ethnic or gendered appearance or couple status (e.g., single, same-sex couple, heterosexual couple) (118, 145, 154, 167). Another newly employed approach in health equity research is to use area-based implicit bias data (137, 152); however, an important caveat concerns how selection bias can affect who voluntarily seeks out and takes such Web-based tests (e.g., mainly highly educated and affluent persons) (18, 22, 201). Together, these types of area-based measures provide evidence solely about what is termed statistical discrimination (i.e., statistical evidence of group differences inferred to arise due to unjust processes but absent explicit evidence of motivation), and while such evidence may not meet legal standards that require proof of intent (3, 174), it can still usefully inform and galvanize action for equity.

**Historical contingency and choice of structural measures and comparison groups.** Which types of structural measures can be used depend on societal and historical context. A key consideration is whether the type of injustice at issue is legally under contest.

Consider, first, the case of adverse racial residential segregation in the United States. Its contours were shaped by US federal and state laws and policies, translated into official maps, that mandated neighborhood residential racial segregation and disinvestment both in and outside Jim Crow states from the 1930s to the mid-1960s, after which such legal racial discrimination was nationally outlawed (55, 135, 170). Given the post-1965 lack of variation by place or time in laws permitting racial discrimination in housing, health equity studies have relied primarily

on area-based indicators that are inferred to reflect the impact of historical legal adverse racial residential segregation and also current illegal racial discrimination. Such indicators have variously pertained to neighborhood composition (e.g., racial/ethnic, income) and conditions (e.g., physical environment, housing stock), intergenerational transfers of wealth and impoverishment as tied to home equity, and political power as tied to voting districts and voting facilities (4, 8, 58, 99, 135, 157, 192, 196). Only with the recent unearthing and digitization of the original 1930s maps (55, 170) has it become possible for health equity researchers to start to investigate the long-term impacts of the original legal discrimination on both neighborhood trajectories and health inequities (79, 130, 135; N. Krieger, E. Wright, J.T. Chen, P.D. Waterman, E.R. Huntley, M. Arcaya, unpublished data; N. Krieger, G. Van Wye, M. Huynh, P.D. Waterman, G. Maduro, W. Li, R.C. Gwynn, O. Barbot, M.T. Bassett, unpublished data).

By contrast, present-day legal and policy conflicts over, say, same-sex marriage and civil unions (19, 34), and over the rights of transgender and third-gender persons (e.g., travesties in South America, hijras in India, and muxes in Mexico) (19, 34, 47, 190, 193), render it feasible to analyze the contemporaneous health impacts of the explicit rules at issue. The same holds, in relation to sexism, for current conflicts over laws and policies regarding sexual harassment (81, 86, 149, 204), gender-based violence (24, 86, 133, 188), and sexual and reproductive rights and health, e.g., regarding access to contraception, abortion, or inclusive health care for sexual or gender minorities, or policies regarding pregnancy and parental leave (13, 24, 53, 59, 62, 67, 68, 86, 144, 181).

Regardless of the type of structural measure employed, careful thought needs to be given to both the comparison groups (101, 173) and the etiologic period (14, 97). Also at issue is the extent to which people are legally able to move in order to benefit from or avoid policy changes (13, 135). Contrasts can include (*a*) comparisons of the health of the targeted groups before and after the law or policy goes into effect in their polity; (*b*) within-polity changes in the magnitude of health inequities comparing the targeted and privileged group, before or after the policy change; and (*c*) cross-sectional comparisons of either the health status of the targeted group or the magnitude of the health inequities between the targeted group and the privileged group across polities that differ in the relevant law or policy. Short-term (or even cross-sectional) temporal comparisons may be apt for outcomes with a short etiologic period (e.g., psychological distress); if longer etiologic periods are involved, time lags must be considered (13, 97).

An especially important consideration concerns the long-term life course and intergenerational realities of embodied harm. What may seem "long ago," from a legal or policy standpoint, can be but an instant in terms of biological generations (97, 104, 107). Jim Crow laws, for example, were decreed illegal in the United States in 1964 (1, 4, 151). However, anyone born in the United States who, in 2019, is age 55 or older was born when Jim Crow was the law of the land, and any child of theirs is the child of a person who potentially experienced this all-encompassing form of structural racism (2, 83, 101). The handful of health equity studies on Jim Crow and its abolition demonstrate its relevance to rates of infant mortality, premature mortality, and current risk of more lethal types of breast cancer (2, 70, 83, 101, 102, 106, 107). It is this understanding of embodied history that health equity researchers can bring to their choice of measures of isms.

## Individual: Exposure to Isms and Anti-Isms

Despite the importance of structural conditions shaping people's exposures, the most commonly used measures in health equity research on isms and health nevertheless are individual-level explicit self-reports of exposure to discrimination (whether as a target or a witness) (**Tables 2**, **3**; **Supplemental Tables 1–3**). Other individual-level metrics, used less frequently, include implicit measures of exposure to discrimination and measures of internalized oppression.

Supplemental Material >

**Explicit self-report.** As discussed at length in other recent reviews (12, 89, 98, 99, 121, 141, 142, 157, 158, 196), in the case of racism, heterosexism, and gender binarism, most studies rely on self-report explicit measures. These measures typically assess if the exposure has occurred; in which context (e.g., at work, in a public setting, at school, from the police or in the courts, online, getting medical care, etc.); with what intensity, chronicity, and duration of exposure (including age at onset); and also how the exposed person responds (e.g., from resistance to internalization) (**Tables 2**, **3**; **Supplemental Tables 1–3**). By contrast, for sexism, measures more typically pertain to phenomena that can be conceptualized as actualizing beliefs and practices emblematic of sexism, e.g., sexual harassment (especially at work, but also in public settings) (31, 103, 150, 204), gender-based violence, and control over sexual and reproductive rights and health (24, 77, 86, 99, 133, 139, 161, 188) (**Tables 2**, **3**; **Supplemental Tables 1–3**).

Supplemental Material >

As with any self-report measures, caveats abound (**Table 2**). First, self-reported measures can express only what people are willing and able to say (92, 99), as shaped by fear, social desirability, trauma, internalized oppression, and lack of knowledge (10, 33, 98, 145, 154, 157). Moreover, members of the privileged group may claim reverse discrimination when confronted by potential diminishment of prior privilege (99, 144, 165, 191, 200); health equity studies that include members of the privileged groups could—but rarely do—employ relevant measures of resentment [e.g., racial resentment (191) or hostile sexism (164)] to aid interpretation of results. Self-reported experiences of discrimination, moreover, are typically analyzed solely as a psychosocial stressor (12, 89, 92, 98, 99, 121, 141, 142, 157, 158, 196), even as some exposures (e.g., unfair policing) pose physical, not just psychosocial, risks (1, 52, 75, 98).

Pointing further to limitations of a solely psychosocial focus, consider the case of wage discrimination, which can harm people's health by causing material (economic) harm (92, 99, 155, 174). Notably, in the United States, the workplace is among the most commonly self-reported sites for racial, gender, and anti-LGBT (lesbian, gay, bisexual, transgender) discrimination (99, 147). It is difficult, however, for employees to know if wage discrimination is occurring. Why? The answer is not simply social norms. Rather, it is currently legal in only 15 of the 50 US states, plus the District of Columbia, for employees to share information about their wages (198). Not surprisingly, several recent high-profile wage discrimination suits in the United States have been started by plaintiffs who accidentally discovered the pay stubs of fellow workers who were paid higher wages for the same job (120, 199). Also not surprisingly, research has found that states with legally protected transparency about wages have the lowest within-job-title gender wage inequities (85). Thus, where rules govern what individuals cannot know, it is likely that structural measures will outperform self-report data as a measure of exposure.

Additional concerns about self-report measures, discussed at length in other literature (11, 27, 99, 121, 157, 196), pertain to whether questions should refer explicitly to discrimination [as per the Experiences of Discrimination measure (110, 111)] or to unfair treatment [as per the Everyday Discrimination Scale (196, 197)], or should solely name the behaviors at issue. Even in research on sexual harassment and gender-based violence, for which the consensus is to focus on behaviors (with no explicit mention of abuse or sexism), controversies abound over which behaviors, enacted by whom, against whom, should count, and how best to counter fears and internalized blame that contribute to underreporting (133, 188, 204). Another problematic issue is that the discrimination and health literature contains numerous studies that employ solely one- or two-item instruments, despite well-known psychometric flaws affecting reliability and validity of instruments with so few items (12, 44, 99, 141, 142).

Despite these challenges, studies from around the world have found that self-reported experiences of diverse types of discrimination and hate crimes rooted in unjust isms are robustly associated with psychological distress and are more complexly associated with adverse health behaviors,

biomarkers, and disease outcomes (99, 128, 157, 158, 193, 196). They are, accordingly, an important complement to structural measures, providing insights into personal experiences that lie on the pathways of embodiment connecting structural drivers to embodied harm and population health inequities.

**Implicit measurement.** Another option is afforded by the implicit association test (IAT), a robustly validated and widely accepted cognitive time-reaction test well-described in the psychological literature, which was designed to address the well-known problems affecting the use of self-report data to measure socially sensitive topics (10, 44, 64, 146). Our preliminary studies (33, 100, 113, 114) of the new IATs we developed to assess someone's sense of being a target of discrimination found that these IATs were not associated with social desirability (as commonly is the case for self-report data), they did not display the well-known person-group discrimination discrepancy that affects self-report measures (which previously had been hypothesized to be an artifact of social desirability), and they were also associated with smoking and with elevated blood pressure (33, 114). Work on these measures remains in its infancy.

**Experimental.** Less commonly, psychosocial research on health impacts of isms has also used experimental techniques, exposing participants either to vignettes or to controlled situations designed to correspond to experiences shaped by these isms, to assess their impact on psychological state, physiological arousal, or diverse biomarkers (44, 99, 128, 145, 158). Despite well-known questions regarding the generalizability of such results to impacts of real-world psychosocial stressors (44, 145, 154), such studies can potentially yield insights into sets of psychological and biological mechanisms that may be involved in behaviorally and biologically translating unjust isms into embodied harm (44, 99, 116, 128).

### Individual: Internalized Isms and Anti-Isms

Supplemental Material >

Finally, health equity studies addressing racism, heterosexism, and gender binarism, but rarely sexism, have employed measures of what may be termed internalized isms, e.g., internalized oppression or stigma (**Tables 2**, **3**; **Supplemental Table 3**). At issue is the extent to which persons in the targeted group consciously or unconsciously accept the privileged group's view of them as inferior, deviant, or shameful, thus potentially increasing the targeted group's risk of harm to health via psychosocial pathways, both behavioral and biological (99, 128, 157, 193, 196). Measures of anti-isms (**Table 1**) conversely can assess, at the individual level, the extent of pride (and perhaps defiance) that persons in the targeted group feel about their group and their analysis of who discriminates against them and why (99, 157); also germane, at the population level, are public demonstrations about, and the appearance of, public slogans regarding, say, LGBT pride or "black is beautiful" (74, 127, 176, 187, 190). As in the case of the self-report measures of exposure to discrimination, measures of internalized oppression and pride typically rely on explicit self-report instruments (with all the same caveats about self-report data) (44, 99, 157) or, less commonly, implicit measures (10, 38).

## CHALLENGES AHEAD: KNOWLEDGE FOR ACTION TO END HEALTH INEQUITIES DUE TO UNJUST ISMS

As should be evident, the field of health equity research is ripe to improve measures of unjust isms, and anti-isms, to generate more powerful knowledge for understanding and for action to advance health equity. As part of moving the field beyond the preponderance of work using individual-level psychosocial measures, I would recommend the following actions:

- Expand the scope of validated structural measures by type and timeframe to encompass historical injustices whose embodied health harms manifest within and across generations (97, 101, 102, 104) and to integrate exposure (as our bodies do every day) across diverse types of isms (67, 74, 92, 95, 99, 162), in addition to clarifying whether the structural measures are rule based or indicators of inferred rules.
- Expand complementary use of anti-ism measures, spanning from structural to internalized, drawing on new work for health justice (21, 69, 155, 162).
- Expand the scope of comparative health equity research (13, 15), taking advantage of cross-national (or subnational) and cross-temporal variations in exposures to unjust isms and corrective anti-isms.
- Develop terrestrially grounded measures that can reveal links between the structural drivers of unjust isms and their toll on environmental degradation, the climate crisis, and health inequities (16, 21, 57, 87, 117, 162, 182).

I encourage you, the reader, to join in the collective efforts to take on these challenges, as one small part of the multifaceted, multisectoral work needed to advance health equity on a threatened planet.

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## LITERATURE CITED

1. Alexander M. 2010. *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*. New York: New Press
2. Almond DV, Chay KY, Greenstone M. 2006. *Civil rights, the War on Poverty, and black-white convergence in infant mortality in the rural South and Mississippi*. Work. Pap. 07–04, Dep. Econ., Mass. Inst. Technol., Cambridge. **http://papers.ssrn.com/sol3/papers.cfm?abstract_id=961021**
3. Altman A. 2016. Discrimination. In *The Stanford Encyclopedia of Philosophy*, ed. EN Zalta. Stanford, CA: Metaphys. Res. Lab, Stanford Univ. Winter ed. **https://plato.stanford.edu/archives/win2016/entries/discrimination/**
4. Anderson C. 2018. *One Person, No Vote: How Voter Suppression Is Destroying Our Democracy*. New York: Bloomsbury
5. Arístegui I, Radusky PD, Zalazar V, Romero M, Schwartz J, Sued O. 2017. Impact of the gender identity law in Argentinean transgender women. *Int. J. Transgend.* 18(4):446–56
6. Armstead CA, Lawler KA, Gorden G, Cross J, Gibbons J. 1989. Relationship of racial stressors to blood pressure responses and anger expression in black college students. *Health Psychol.* 8:541–56
7. Austin KF, Noble MD, Mejia MT. 2014. Gendered vulnerabilities to a neglected disease: a comparative investigation of the effect of women's legal economic rights and social status on malaria rates. *Int. J. Comp. Sociol.* 55(3):204–28
8. Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett M. 2017. Structural racism and health inequities in the USA: evidence and interventions. *Lancet* 389:1453–63

9. Baldwin AM, Dodge B, Schick V, Sanders SA, Fortenberry JD. 2017. Sexual minority women's satisfaction with health care providers and state-level structural support: investigating the impact of lesbian, gay, bisexual and transgender nondiscrimination legislation. *Women's Health Issues* 27(3):271–78
10. Banaji MR, Greenwald AG. 2013. *Blindspot: Hidden Biases of Good People*. New York: Delacourt
11. Barkan S. 2018. Measuring perceived mistreatment: potential problems in asking about "discrimination." *Sociol. Inq.* 88(2):245–53
12. Bastos JL, Celeste RK, Faerstein E, Barros AJD. 2010. Racial discrimination and health: a systematic review of scales with a focus on their psychometric properties. *Soc. Sci. Med.* 70(7):1091–99
13. Beckfield J. 2018. *Political Sociology and the People's Health*. New York: Oxford Univ. Press
14. Beckfield J, Krieger N. 2009. Epi + demos + cracy: linking political systems and priorities to the magnitude of health inequities—evidence, gaps, and a research agenda. *Epidemiol. Rev.* 31(1):152–77
15. Beckfield J, Morris KA, Bambra C. 2018. How social policy contributes to the distribution of population health: the case of gender health equity. *Scand. J. Public Health* 46:6–17
16. Bell K. 2016. Bread and roses: a gender perspective on environmental justice and public health. *Int. J. Environ. Res. Public Health* 13(10):1005
17. Berkman LF, Kawachi I, Glymour M, eds. 2014. *Social Epidemiology*. New York: Oxford Univ. Press. 2nd ed.
18. Bethlehem J. 2010. Selection bias in web surveys. *Int. Stat. Rev.* 78:161–88
19. Beyrer C. 2014. Pushback: the current wave of anti-homosexuality laws and impacts on health. *PLOS Med.* 11(6):e1001658
20. Bhandari A, Burroway R. 2018. Hungry for equality: a longitudinal analysis of women's legal rights and food security in developing countries. *Sociol. Q.* 59(3):424–48
21. Birn A-E, Pillay Y, Holtz TH. 2017. *Textbook of Global Health*. New York: Oxford Univ. Press
22. Blair IV, Brondolo E. 2017. Moving beyond the individual: community-level prejudice and health. *Soc. Sci. Med.* 183:169–72
23. Blinder A, Burch ADS. 2019. Fate of Confederate monuments is stalled by competing legal battles. *New York Times*, Jan. 20. **https://www.nytimes.com/2019/01/20/us/confederate-monuments-legal-battles.html**
24. Bonifacio GT, ed. 2018. *Global Currents in Gender and Feminisms: Canadian and International Perspectives*. Bingley, UK: Emerald
25. Bosse JD, Chiodo L. 2016. It is complicated: gender and sexual orientation in LGBTQ youth. *J. Clin. Nurs.* 25:3665–75
26. Braveman P, Gruskin S. 2003. Defining equity in health. *J. Epidemiol. Community Health* 57:254–58
27. Brown TN. 2001. Measuring self-perceived racial and ethnic discrimination in social surveys. *Sociol. Spectr.* 21(3):377–92
28. Buchanan NT, Settles IH, Wu IHC, Hayashino DS. 2018. Sexual harassment, racial harassment, and well-being among Asian American women: an intersectional approach. *Women Therapy* 41(3–4/S1):261–80
29. Burks AC, Cramer RJ, Henderson CE, Stroud CH, Crosby JW, Graham J. 2018. Frequency, nature and correlates of hate crime victimization experiences in an urban sample of lesbian, gay, and bisexual community members. *J. Interpers. Violence* 33(3):402–20
30. Cadwalladr C. 2018. Our Cambridge Analytica scoop shocked the world. But the whole truth remains elusive. *The Guardian*, Dec. 23. **https://www.theguardian.com/uk-news/2018/dec/23/cambridge-analytica-facebook-scoop-carole-cadwalladr-shocked-world-truth-still-elusive**
31. Campos-Serna J, Ronda-Pérez E, Artacoz L, Moen BE, Benavides FG. 2013. Gender inequalities in occupational health related to the unequal distribution of working and employment conditions: a systematic review. *Int. J. Equity Health* 12:57
32. Carliner H, Sarvet AL, Gordon AR, Hasin DR. 2017. Gender discrimination, educational attainment, and drug use among U.S. women. *Soc. Psychol. Psychiatr. Epi.* 52(3):279–89
33. Carney DR, Banaji MR, Krieger N. 2010. Implicit measures reveal evidence of personal discrimination. *Self Identity* 9(2):162–76

34. Carroll A, Mendos LR. 2017. *State sponsored homophobia 2017: a world survey of sexual orientation laws: criminalization, protection, and recognition*. Rep., Int. Lesbian, Gay, Bisex., Trans Intersex Assoc. (ILGA), Geneva. **https://ilga.org/sites/default/files/ILGA_State_Sponsored_Homophobia_2017_WEB.pdf**
35. Caughey D, Warshaw C. 2016. The dynamics of state policy liberalism: 1936–2014. *Am. J. Political Sci.* 60(4):899–913
36. Chae DH, Clouston S, Martz CD, Hatzenbuehler ML, Cooper HLF, et al. 2018. Area racism and birth outcomes among blacks in the United States. *Soc. Sci. Med.* 199(SI):49–55
37. Chae DH, Lincoln KD, Adler NE, Syme SL. 2010. Do experiences of racial discrimination predict cardiovascular disease among African American men? The moderating role of internalized negative racial group attitudes. *Soc. Sci. Med.* 71(6):1182–88
38. Chae DH, Powell WA, Nuru-Jeter AM, Smith-Bynum MA, Seaton EK, et al. 2017. The role of racial identity and implicit racial bias in self-reported racial discrimination: implications for depression among African American men. *J. Black Psychol.* 43:789–812
39. Chambers BD, Erausquin JT, Tanner AE, Nichols TR, Brown-Jeffy S. 2018. Testing the association between traditional and novel indicators of county-level structural racism and birth outcomes among black and white women. *J. Racial Ethn. Disparities* 5(5):966–77
40. Chan DK-S, Lam CB, Chow SY, Cheung SF. 2008. Examining the job-related, psychological, and physical outcomes of workplace sexual harassment: a meta-analytic review. *Psychol. Women's Q.* 32(4):362–76
41. Choi KH, Bowleg L, Neilands TB. 2011. The effects of sexism, psychological distress, and difficult sexual situations on U.S. women's sexual risk behaviors. *AIDS Educ. Prev.* 23:397–411
42. Chodzen G, Hidalgo MA, Chen D, Garofalo R. 2019. Minority stress factors associated with depression and anxiety among transgender and gender-nonconforming youth. *J. Adolesc. Health* 64(4):467–71
43. Coburn J. 2017. Concepts for studying urban environmental justice. *Curr. Env. Health Rep.* 4(1):61–67
44. Correll J, Judd CM, Park B, Wittenbrink B. 2010. Measuring prejudice, stereotypes, and discrimination. In *The SAGE Handbook of Prejudice, Stereotyping and Discrimination*, ed. JF Dovidio, M Hewstone, P Glick, VM Esses, pp. 45–62. Thousand Oaks, CA: Sage
45. Daoud N, Gao M, Osman A, Muntaner C. 2018. Interpersonal and institutional ethnic discrimination and mental health in a random sample of Palestinian minority men smokers in Israel. *Soc. Psychiatry Psychiatr. Epidemiol.* 53(10):1111–22
46. de Freitas DF, Fernandes-Jesus M, Ferreira PD, Coimbra S, Teixeira PM, et al. 2018. Psychological correlates of perceived ethnic discrimination in Europe: a meta-analysis. *Psychol. Violence* 8(6/SI):712–25
47. Diehl A, Vieira DL, Zaneti MM, Fanganiello A, Sharan P, et al. 2017. Social stigma, legal and public health barriers faced by the third gender phenomenon in Brazil, India, and Mexico: travesties, hijras and muxes. *Int. J. Soc. Psychiatry* 63(5):389–99
48. Dinh H, Strazdins L, Welsh J. 2017. Hour-glass ceilings: work-hour thresholds, gendered health inequities. *Soc. Sci. Med.* 176:42–51
49. Doyal L, Gough I. 1991. *A Theory of Human Need*. Basingstoke, UK: MacMillan
50. Du Bois SN, Yoder W, Guy AA, Manser K, Ramos S. 2018. Examining associations between state-level transgender policies and transgender health. *Transgend. Health* 3(1):220–24
51. Eliezer D, Major B, Mendes WB. 2010. The costs of caring: Gender identification increases threat following exposure to sexism. *J. Exp. Soc. Psychol.* 46(1):159–65
52. English D, Bowleg L, del Río-González AM, Tschann JM, Agans R, Malebranche DJ. 2017. Measuring black men's police-based discrimination experiences: development and validation of the Police and Law Enforcement (PLE) scale. *Cult. Divers. Ethn. Minor. Psychol.* 23(2):185–99
53. Espey E, Dennis A, Landy U. 2019. The importance of access to comprehensive reproductive health care, including abortion: a statement from women's health professional organizations. *Am. J. Obstet. Gynecol.* 220(1):67–70
54. Fausto-Sterling A. 2012. *Sex/Gender: Biology in a Social World*. New York: Routledge
55. FHA (Fed. Housing Adm.). 1934. *Underwriting Manual: Underwriting and Valuation Procedure Under Title II of the National Housing Act*. Washington, DC: Fed. Hous. Adm.

56. Frederickson GM. 2002. *Racism: A Short History*. Princeton, NJ: Princeton Univ. Press
57. Friel S. 2019. *Climate Change and the People's Health*. New York: Oxford
58. Gee GC, Ford CL. 2011. Structural racism and health inequities: old issues, new directions. *Du Bois Rev*. 8(1):115–32
59. Gezinski LB. 2012. The global gag rule: impacts of conservative ideology on women's health. *Int. Soc. Work* 55(6):837–49
60. Gianattasio KZ, Wu Q, Glymour MM, Power MC. 2019. Comparison of methods for algorithmic classification of dementia status in the Health and Retirement Study. *Epidemiol*. 30:291–302
61. Gilbert SF, Epel D. 2015. *Ecological Developmental Biology: The Environmental Regulation of Development, Health, and Evolution*. Sunderland, MA: Sinauer Assoc.
62. Gold RB, Starrs AM. 2017. US reproductive health and rights: beyond the global gag rule. *Lancet Public Health* 2(3):e122–23
63. Goodman SN, Goel S, Cullen MR. 2018. Machine learning, health disparities, and causal reasoning (editorial). *Ann. Int. Med.* 169:883–84
64. Greenwald AG, Poehlman TA, Uhlmann EL, Banaji MR. 2009. Understanding and using the implicit association test: III. Meta-analysis of predictive validity. *J. Pers. Soc. Psychol.* 97:17–41
65. Grene M. 1975. People and other animals. In *The Understanding of Nature: Essays in the Philosophy of Biology*, ed. M Grene, pp. 346–60. Dordrecht, Neth.: D. Reidel
66. Grodin MA, Tarantola D, Annas GJ, Gruskin S, eds. 2013. *Health and Human Rights in a Changing World*. New York: Routledge. 3rd ed.
67. Grusky DB, Hill J, eds. 2018. *Inequality in the 21st Century*. Boulder, CO: Westview
68. Guillaume A, Rossier C. 2018. Abortion around the world: an overview of legislation, measures, trends, and consequences, transl. P Reeve. *Population* 73:271–306
69. Haberle M, Kumiawan H, eds. 2018. *Strategies for health justice: lessons from the field*. Field Rep., Poverty Race Res. Action Counc. (PPRAC), Washington, DC. **https://prrac.org/strategies-for-health-justice-lessons-from-the-field/**
70. Hahn RA, Truman BI, Williams DR. 2018. Civil rights as determinants of public health and racial and ethnic health equity: health care, education, employment, and housing in the United States. *Soc. Sci. Med. Popul. Health* 4:17–24
71. Harnois CE, Bastos JL. 2018. Discrimination, harassment, and gendered health inequities: Do perceptions of workplace mistreatment contribute to the gender gap in self-reported health? *J. Health Soc. Behav.* 59(2):283–99
72. Harris RB, Stanley J, Cormack DM. 2018. Racism and health in New Zealand: prevalence over time and associations between recent experience of racism and health and wellbeing measures using national survey data. *PLOS ONE* 13(5):e0196476
73. Hatzenbuehler ML, McLaughlin KA, Keyes KM, Hasin DS. 2010. The impact of institutional discrimination on psychiatric disorders in lesbian, gay, and bisexual populations: a prospective study. *Am. J. Public Health* 100(3):452–59
74. Hill Collins P, Bilge S. 2016. *Intersectionality*. Cambridge, UK: Polity Press
75. Hinton EK. 2016. *From the War on Poverty to The War on Crime: The Making of Mass Incarceration in America*. Cambridge, MA: Harvard Univ. Press
76. Hoggard LS, Hill LK, Gray DL, Sellers RM. 2015. Capturing the cardiac effects of racial discrimination: Do the effects "keep going"? *Int. J. Psychophysiol.* 97:163–70
77. Homan P. 2019. Structural sexism and health in the United States: a new perspective on health inequality and the gender system. *Am. Sociol. Rev.* 84(3):486–516
78. Huynh VH, Hunyh Q-L, Stein M-P. 2017. Not just sticks and stones: indirect ethnic discrimination leads to greater physiological reactivity. *Cult. Divers. Ethn. Minor. Psychol.* 23(3):425–34
79. Jacoby SF, Dong B, Beard JH, Wiebe DJ, Morrison CN. 2018. The enduring impact of historical and structural racism on urban violence in Philadelphia. *Soc. Sci. Med.* 199:87–95
80. Jäggi T, Jellestad L, Corbisiero S, Schaefer DJ, Jenewein J, et al. 2018. Gender minority stress and depressive symptoms in transitioned Swiss transpersons. *Biomed. Res. Int.* 2018:8639263
81. Jane EA. 2017. *Misogyny Online: A Short (And Brutish) History*. London: SAGE

82. Kabel C. 2017. Health, equity and the narrative of place: commentary. *NAM Perspect*. Nov. 27. **https://nam.edu/health-equity-and-the-narrative-of-place**
83. Kaplan GR, Ranjit N, Burgard SA. 2008. Lifting gates, lengthening lives: Did civil rights policies improve the health of African American women in the 1960s and 1970s? In *Making Americans Healthier: Social and Economic Policy as Health Policy*, ed. RF Schoeni, JS House, G Kaplan, H Pollack, pp. 145–70. New York: Russell Sage Found.
84. Khubchandani J, Soni A, Fahey N, Raithatha N, Prabhakaran A, et al. 2018. Caste matters: perceived discrimination among women in rural India. *Arch. Women's Ment. Health* 21(2):163–70
85. Kim M. 2015. Pay secrecy and the gender wage gap. *Ind. Relat.* 54(4):648–67
86. Kimmel G. 2017. *The Gendered Society*. New York: Oxford Univ. Press. 6th ed.
87. Klein N. 2014. *This Changes Everything: Capitalism versus the Climate*. New York: Simon & Schuster
88. Kramar DE, Anderson A, Hilfer H, Branden K, Gutrich JJ. 2018. A spatially informed analysis of environmental justice: analyzing the effects of gerrymandering and the proximity of minority populations to U.S. superfund sites. *Environ. Justice* 11(1):29–39
89. Kressin NR, Raymond KL, Manze M. 2008. Perceptions of race/ethnicity-based discrimination: a review of measures and evaluation of their usefulness for the health care setting. *J. Health Care Poor Underserved* 19(3):697–730
90. Krieger N. 1987. Shades of difference: theoretical underpinnings of the medical controversy on black/white differences in the United States, 1830–1870. *Int. J. Health Serv.* 17(2):259–78
91. Krieger N. 1994. Epidemiology and the web of causation: Has anyone seen the spider? *Soc. Sci. Med.* 39(7):887–903
92. Krieger N. 1999. Embodying inequality: a review of concepts, measures, and methods for studying health consequences of discrimination. *Int. J. Health Services* 29:295–352. Repr., 2000. Discrimination and health. In *Social Epidemiology*, ed. L Berkman, I Kawachi, pp. 36–75. New York: Oxford Univ. Press
93. Krieger N. 2001. Theories for social epidemiology in the 21st century: an ecosocial perspective. *Int. J. Epidemiol.* 30(4):668–77
94. Krieger N. 2003. Genders, sexes, and health: What are the connections—and why does it matter? *Int. J. Epidemiol.* 32:652–57
95. Krieger N. 2005. Embodiment: a conceptual glossary for epidemiology. *J. Epidemiol. Community Health* 59(5):350–55
96. Krieger N. 2008. Proximal, distal, and the politics of causation: What's level got to do with it? *Am. J. Public Health* 98:221–30
97. Krieger N. 2011. *Epidemiology and the People's Health: Theory and Context*. New York: Oxford Univ. Press
98. Krieger N. 2012. Methods for the scientific study of discrimination and health: an ecosocial approach. *Am. J. Public Health* 102:936–44
99. Krieger N. 2014. Discrimination and health inequities. See Ref. 17, pp. 63–125. Repr., 2014. *Int. J. Health Services* 44:643–710
100. Krieger N, Carney D, Lancaster K, Waterman PD, Kosheleva A, Banaji M. 2010. Combining explicit and implicit measures of racial discrimination in health research. *Am. J. Public Health* 100(8):1485–92
101. Krieger N, Chen JT, Coull B, Waterman PD, Beckfield J. 2013. The unique impact of abolition of Jim Crow laws on reducing inequities in infant death rates and implications for choice of comparison groups in analyzing societal determinants of health. *Am. J. Public Health* 103(12):2234–44
102. Krieger N, Chen JT, Coull BA, Beckfield J, Kiang MV, Waterman PD. 2014. Jim Crow and premature mortality among the US black and white population, 1960–2009: an age-period-cohort analysis. *Epidemiology* 25(4):494–504
103. Krieger N, Chen JT, Waterman PD, Hartman C, Stoddard AM, et al. 2008. The inverse hazard law: blood pressure, sexual harassment, racial discrimination, workplace abuse and occupational exposures in US low-income black, white, and Latino workers. *Soc. Sci. Med.* 67(12):1970–81
104. Krieger N, Chen JT, Waterman PD, Kosheleva A, Beckfield S. 2013. History, haldanes, and health inequities: exploring phenotypic changes in body size by generation and income level in the US-born white and black non-Hispanic populations, 1959–1962 to 2005–2008. *Int. J. Epidemiol.* 42:281–95

105. Krieger N, Davey Smith G. 2016. The tale wagged by the DAG: broadening the scope of causal inference and explanation for epidemiology. *Int. J. Epidemiol.* 45:1787–808
106. Krieger N, Jahn JL, Waterman PD. 2017. Jim Crow and estrogen-receptor-negative breast cancer: US-born black and white non-Hispanic women, 1992–2012. *Cancer Causes Control* 28:49–59
107. Krieger N, Jahn JL, Waterman PD, Chen JT. 2018. Breast cancer estrogen receptor status according to biological generation: US black and white women born 1915–1979. *Am. J. Epidemiol.* 187:960–70
108. Krieger N, Kim R, Feldman J, Waterman PD. 2018. Using the Index of Concentration at the Extremes at multiple geographic levels to monitor health inequities in an era of growing spatial social polarization: Massachusetts, USA (2010–2014). *Int. J. Epidemiol.* 47(3):788–819
109. Krieger N, Rowley DL, Herman AA, Avery B, Phillips MT. 1993. Racism, sexism, and social class: implications for studies of health, disease, and well-being. *Am. J. Prev. Med.* 9(Suppl.):82–122
110. Krieger N, Sidney S. 1996. Racial discrimination and blood pressure: the CARDIA study of young black and white adults. *Am. J. Public Health* 86(10):1370–78
111. Krieger N, Smith K, Naishadham D, Hartman C, Barbeau EM. 2005. Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. *Soc. Sci. Med.* 61(7):1576–96
112. Krieger N, Waterman PD, Gryparis A, Coull BA. 2015. Black carbon exposure, socioeconomic and racial/ethnic spatial polarization, and the Index of Concentration at the Extremes (ICE). *Health Place* 34:215–28
113. Krieger N, Waterman PD, Kosheleva A, Chen JT, Carney DR, et al. 2011. Exposing racial discrimination: implicit & explicit measures—the *My Body, My Story* study of 1005 US-born black & white community health center members. *PLOS ONE* 6(11):e27636
114. Krieger N, Waterman PD, Kosheleva A, Chen JT, Smith KS, et al. 2013. Racial discrimination & cardiovascular disease risk: *My Body My Story* study of 1005 US-born black and white community health center participants (US). *PLOS ONE* 8(10):e77174
115. Krieger N, Waterman PD, Spasojevic J, Li W, Maduro G, Van Wye G. 2016. Public health monitoring of privilege and deprivation with the Index of Concentration at the Extremes (ICE). *Am. J. Public Health* 106(2):256–63
116. Kubzansky LD, Seeman TE, Glymour MM. 2014. Biological pathways linking social conditions and health: plausible mechanisms and emerging puzzles. See Ref. 17, pp. 512–61
117. Latour B. 2018. *Down to Earth: Politics in the New Climatic Regime*. Cambridge, UK/Medford, MA: Polity. Engl. Ed.
118. Lauster N, Easterbrook A. 2011. No room for new families? A field experiment measuring rental discrimination against same-sex couples and single parents. *Soc. Probl.* 58(3):389–409
119. Lepore SJ, Revenson TA, Weinberger SL, Weston P, Frisina PG, et al. 2006. Effects of social stressors on cardiovascular reactivity among black and white women. *Ann. Behav. Med.* 31(2):120–27
120. Levin S. 2019. Oracle systematically underpaid thousands of women, lawsuit says. *The Guardian*, Jan. 18. **https://www.theguardian.com/technology/2019/jan/18/oracle-women-workers-lawsuit-salaries-pay**
121. Lewis TT, Cogburn CD, Williams DR. 2015. Self-reported experiences of discrimination and health: scientific advances, ongoing controversies, and emerging issues. *Annu. Rev. Clin. Psychol.* 11:407–40
122. Liebler CA, Porter SR, Fernandez LE, Noon JM, Ennis SR. 2017. America's churning races: race and ethnic response changes between Census 2000 and the 2010 Census. *Demography* 54(1):259–84
123. Liptak A. 2019. Supreme Court revives transgender ban for military service. *New York Times*, Jan. 22. **https://www.nytimes.com/2019/01/22/us/politics/transgender-ban-military-supreme-court.html**
124. Lipton P. 2004. *Inference to the Best Explanation*. London: Routledge/Taylor and Francis Group. 2nd ed.
125. Lukachko A, Hatzenbuhler ML, Keyes KM. 2014. Structural racism and myocardial infarction in the United States. *Soc. Sci. Med.* 103(SI1):42–50
126. Macmillan R, Shofia N, Sigle W. 2018. Gender and the politics of death: female representation, political and developmental context, and population health in a cross-national panel. *Demography* 55(5):1905–34

127. MacPhee J, ed. 2010. *Celebrate People's History: The Poster Book of Resistance and Revolution*. New York: Fem. Press, City Univ. N. Y.
128. Major B, Dovidio JF, Link BG, eds. 2017. *The Oxford Handbook of Stigma, Discrimination, and Health*. New York: Oxford Univ. Press
129. Marshall BD, Socías ME, Kerr T, Zalazar V, Sued O, Arístegui I. 2016. Prevalence and correlates of lifetime suicide attempts among transgender persons in Argentina. *J. Homosex.* 63(7):955–67
130. McClure E, Feinstein L, Cordoba E, Douglas C, Emch M, et al. 2019. The legacy of redlining in the effect of foreclosure on Detroit residents' self-rated health. *Health Place* 55:9–19
131. Mereish EH, Katz-Wise SL, Woulfe J. 2017. Bisexual-specific minority stressors, psychological distress, and suicidality in bisexual individuals: the mediating role of loneliness. *Prev. Sci.* 18(6/S1):716–25
132. Mereish HE, Poteat VP. 2015. A relational model of sexual minority mental and physical health: the negative effects of shame on relationships, loneliness, and health. *J. Couns. Psychol.* 62(3):425–37
133. Merry SE. 2016. *The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking*. Chicago: Univ. Chicago Press
134. Mesic A, Franklin L, Cansever A, Potter F, Sharma A, et al. 2018. The relationship between structural racism and black-white disparities in fatal police shootings at the state level. *J. Natl. Med. Assoc.* 110(2):106–16
135. Metzger MW, Webber JS, eds. 2019. *Facing Segregation: Housing Policy Solutions for a Stronger Society*. New York: Oxford Univ. Press
136. Milevska S, ed. 2016. *On Productive Shame, Reconciliation, and Agency*. Berlin: Sternberg
137. Miller CT, Varni SE, Solomon SE, DeSarno MJ, Bunn JY. 2016. Macro-level implicit HIV prejudice and the health of community residents with HIV. *Health Psychol.* 35(8):807–15
138. Miller G. 2008. Women's suffrage, political responsiveness, and child survival in American history. *Q. J. Econ.* 123:1287–327
139. Molix L. 2014. Sex differences in cardiovascular health: Does sexism influence women's health? *Am. J. Med. Sci.* 348(2):153–55
140. Moore LD, Elkavich A. 2008. Who's using and who's doing time: incarceration, the war on drugs, and public health. *Am. J. Public Health* 98(5):782–86
141. Morrison MA, Bishop CJ, Morrison TG. 2018. What is the best measure of discrimination against trans people?: A systematic review of the psychometric literature. *Psychol. Sex.* 9(3):269–87
142. Morrison TG, Bishop CJ, Morrison MA, Parker-Taneo K. 2016. A psychometric review of measures assessing discrimination against sexual minorities. *J. Homosex.* 63(8):1086–126
143. Mouzon DM, McLean JS. 2017. Internalized racism and mental health among African-Americans, US-born Caribbean Blacks, and foreign-born Caribbean blacks. *Ethn. Health.* 22:36–48
144. Nadler JT, Lowery MR, eds. 2018. *The War on Women in the United States: Beliefs, Tactics, and the Best Defense*. Santa Barbara, CA: Praeger
145. Natl. Res. Counc. 2004. *Measuring Racial Discrimination*, ed. RM Blank, R Babady, CF Citro. Washington, DC: National Acad. Press
146. Nosek BA, Hawkins CB, Frazier RS. 2011. Implicit social cognition: from measures to mechanisms. *Trends Cogn. Sci.* 15:152–59
147. NPR/Harvard T. H. Chan Sch. Public Health/Robert Wood Johnson Found. 2017. Discrimination in America. *Race, Racism, and Health*. **https://www.rwjf.org/en/library/research/2017/10/discrimination-in-america--experiences-and-views.html**
148. O'Neil C. 2016. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. New York: Crown
149. O'Neil A, Sojo V, Fileborn B, Scovelle AJ, Milner AJ. 2018. The #MeToo movement: an opportunity in public health? *Lancet* 391(10140):2587–859
150. Okechukwu CA, Souza K, David KD, de Castro AB. 2014. Discrimination, harassment, abuse, and bullying in the workplace: contribution of workplace injustice to occupational health disparities. *Am. J. Ind. Med.* 57(5):573–856
151. Omi M, Winant H. 2015. *Racial Formation in the United States*. New York: Routledge/Taylor & Francis Group. 3rd ed.

152. Orchard J, Price J. 2017. County-level racial prejudice and the black-white gap in infant health outcomes. *Soc. Sci. Med.* 181:191–98
153. Oxford Engl. Dict. 2018. Ism. *Oxford English Dictionary Online*. **https://www-oed-com.ezp-prod1.hul.harvard.edu/view/Entry/100006**
154. Pager D. 2010. Measuring discrimination. In *Discrimination in an Unequal World*, ed. MA Centeno, KS Newman, pp. 45–62. New York: Oxford Univ. Press
155. PAHO (Pan Am. Health Organ.). 2018. *Just societies: health equity and dignified lives. Executive summary of the report of the Commission of the Pan American Health Organization on Equity and Health Inequalities in the Americas*. Rep., PAHO, Washington, DC. **http://iris.paho.org/xmlui/bitstream/handle/123456789/49505/9789275120217_eng.pdf**
156. Palma-Solis M, Vives-Cases C, Alvarez-Dardet C. 2008. Gender progress and government expenditure as determinants of femicide. *Ann. Epidemiol.* 18:322–29
157. Paradies Y, Bastos JL, Priest N. 2017. Prejudice, stigma, bias, discrimination, and health. In *Cambridge Handbook of the Psychology of Prejudice*, ed. CG Sibley, FK Barlow, pp. 559–81. Cambridge, UK: Cambridge Univ. Press
158. Paradies Y, Ben J, Denson N, Elias A, Priest N, et al. 2015. Racism as a determinant of health: a systematic review and meta-analysis. *PLOS ONE* 10(9):e0138511
159. Patterson JG, Jabson JM, Bowen DJ. 2017. Measuring sexual and gender minority populations in health surveillance. *LGBT Health* 4(2):82–105
160. Pavão ALB, Ploubidis GB, Werneck G, Campos MR. 2012. Racial discrimination and health in Brazil: evidence from a population-based survey. *Ethn. Dis.* 22:353–59
161. Payne S, Doyal L. 2015. Women, men, and health. In *Oxford Textbook on Global Health*, ed. R Detels, M Gulliford, QA Karim, CC Tan, pp. 1328–44. New York: Oxford Univ. Press. 6th ed.
162. People's Health Movement. 2017. *Global Health Watch 5: An Alternative World Health Report*. London: Zed Books
163. Perales F, Todd A. 2018. Structural stigma and the health and wellbeing of Australian LGB populations: exploiting geographic variation in the results of the 2017 same-sex marriage plebiscite. *Soc. Sci. Med.* 208:190–99
164. Petterson A, Sutton RM. 2018. Sexist ideology and endorsement of men's control over women's decisions in reproductive health. *Psychol. Women Q.* 42(2):235–47
165. Pincus FL. 2003. *Reverse Discrimination: Dismantling the Myth*. Boulder, CA: Lynne Rienner
166. Puckett JA, Newcomb ME, Ryan DT, Swann G, Garofalo R, Mustanski B. 2017. Internalized homophobia and perceived stigma: a validation study of stigma measures in a sample of young men who have sex with men. *Sex. Res. Soc. Policy* 14(1):1–16
167. Quillian L, Pager D, Hexel O, Midtbøen AH. 2017. Meta-analysis of field experiments shows no change in racial discrimination in hiring over time. *PNAS* 114:10870–75
168. Rajkomar A, Hardt M, Howell MD, Corrado G, Chin HM. 2018. Ensuring fairness in machine learning to advance health equity. *Ann. Intern. Med.* 169:866–72
169. Rosenberg NA, Edge MD, Pritchard JK, Feldman MW. 2018. Interpreting polygenic scores, polygenic adaptation, and human phenotypic differences. *Evol. Med. Public Health* 2019:26–34
170. Rothstein R. 2017. *The Color of Law: A Forgotten History of How Our Government Segregated America*. New York: Liveright
171. Sawyer PJ, Major B, Casad BJ, Townsend SSM, Mendes WB. 2012. Discrimination and the stress response: psychological and physiological consequences of anticipating prejudice in interethnic interactions. *Am. J. Public Health* 102(5):1020–26
172. Sayej N. 2018. J Marion Sims: controversial statue taken down but debate still rages. *The Guardian*, April 21. **https://www.theguardian.com/artanddesign/2018/apr/21/j-marion-sims-statue-removed-new-york-city-black-women**
173. Schwartz S, Meyer IH. 2010. Mental health disparities research: the impact of within and between group analyses of tests of the social stress hypotheses. *Soc. Sci. Med.* 70(8):1111–18
174. Shen W, Dhanani L. 2015. Measuring and defining discrimination. In *The Oxford Handbook of Workplace Discrimination*, ed. AJ Colella, EB King, pp. 297–314. New York: Oxford Univ. Press

175. Shires DA, Jaffee KD. 2016. Structural discrimination is associated with smoking status among a national sample of transgender individuals. *Nicotine Tob. Res.* 18(6):1502–8
176. Solnit R. 2016. *Hope in The Dark: Untold Histories, Wild Possibilities*. Chicago: Haymarket Press. 3rd ed.
177. Song Y, Dong X-Y. 2017. Domestic violence and women's land rights in rural China: findings from a national survey in 2010. *J. Dev. Stud.* 53(9):1471–85
178. Sörlin A, Lindholm L, Ng N, Öhman A. 2011. Gender equality in couples and self-rated health—a survey study evaluating measurements of gender equality and its impact on health. *Int. J. Equity Health* 10:37
179. Steyn R. 2012. Expanding the suite of measures of gender-based discrimination: gender differences in ablution facilities in South Africa. *S. Afr. J. Econ. Manag. Sci.* 15(2):222–34
180. Szymanski DM, Gupta A. 2009. Examining the relationship between multiple internalized oppressions and African American lesbian, gay, bisexual, and questioning persons' self-esteem and psychological distress. *J. Couns. Psychol.* 56(1):110–18
181. Tarantola D, Gruskin S. 2018. The recognition and evolution of the HIV and human rights interface: 1981–2017. In *Research Handbook on Global Health Law*, ed. GL Burci, B Toebes, pp. 303–39. Northampton, MA: Edward Elgar
182. Taylor DE. 2014. *Toxic Communities: Environmental Racism, Industrial Pollution, and Residential Mobility*. New York: N. Y. Univ. Press
183. Thurston RC, Chang Y, Matthews KA, von Känel R, Koenen K. 2019. Association of sexual harassment and sexual assault with midlife women's mental and physical health. *JAMA Intern. Med.* 179(1):48–53
184. Towns A. 2018. Global patterns and debates in the granting of women's suffrage. In *The Palgrave Handbook of Women's Political Rights*, ed. S Franceschet, ML Krook, N Tan, pp. 3–20. London: Palgrave MacMillan
185. Townsend SSM, Major B, Gangi CE, Mendes WB. 2011. From "in the air" to "under the skin": cortisol responses to social identity threat. *Pers. Soc. Psychol. Bull.* 37(2):151–64
186. UN Gen. Assem. Resolut. 217 A (III). 1948. *Universal Declaration of Human Rights*, Dec. 10. UN Doc. A/810. **https://www.un.org/en/universal-declaration-human-rights/index.html**
187. Valls A. 2018. *Rethinking Racial Justice*. New York: Oxford Univ. Press
188. Walby S, Towers J, Balderston S, Corradi C, Francis B, et al. 2017. *The Concept and Measurement of Violence Against Women and Men*. Bristol, UK: Policy Press
189. Wallace M, Crear-Perry J, Richardson L, Tarver M, Theall K. 2017. Separate and unequal: structural racism and infant mortality in the US. *Health Place* 45:140–44
190. Weeks J. 2017. *Sexuality*. London: Routledge. 4th ed.
191. Wetts R, Willer R. 2018. Privilege on the precipice: perceived racial status threats that lead white Americans to oppose welfare programs. *Soc. Forces* 97(2):793–822
192. White K, Borrell LN. 2011. Racial/ethnic segregation: framing the context of health risk and health disparities. *Health Place* 17(2):438–48
193. White Hughto JM, Reisner SL, Pachankis JE. 2015. Transgender stigma and health: a critical review of stigma determinants, mechanisms, and interventions. *Soc. Sci. Med.* 147:222–31
194. Whitehead M. 1992. The concepts and principles of equity and health. *Int. J. Health Serv.* 22(3):429–45
195. Wildeman C, Wang EA. 2017. Mass incarceration, public health, and widening inequality in the USA. *Lancet* 389(10077):1464–74
196. Williams DR, Lawrence JA, Davis BA. 2019. Racism and health: evidence and needed research. *Annu. Rev. Public Health* 40:105–25
197. Williams DR, Yu Y, Jackson JS, Anderson NB. 1997. Racial differences in physical and mental health: socio-economic status, stress and discrimination. *J. Health Psychol.* 2(3):335–51
198. Women's Bur. 2017. Equal pay and pay transparency protections. *US Department of Labor*. **https://www.dol.gov/wb/equalpay/equalpaymap.htm**
199. Wong K. 2019. Want to close the pay gap? Pay transparency will help. *New York Times*, Jan. 20. **https://www.nytimes.com/2019/01/20/smarter-living/pay-wage-gap-salary-secrecytransparency.html**
200. Woo B. 2018. Racial discrimination and mental health in the USA: testing the reverse racism hypothesis. *J. Rac. Ethn. Health Disparities* 5:766–73

201. Yazdy MM, Werler MM. 2015. Comparison of web versus interview participants in a case-control study. *Ann. Epidemiol.* 25:794–96
202. Yuan Q. 2018. Mega freight generators in my backyard: a longitudinal study of environmental justice in warehousing location. *Land Use Policy* 76:130–43
203. Yudell M. 2014. *Race Unmasked: Biology and Race in the Twentieth Century*. New York: Columbia Univ. Press
204. Zippel KS. 2006. *The Politics of Sexual Harassment: A Comparative Study of the United States, the European Union, and Germany*. Cambridge, UK: Cambridge Univ. Press