Intersectionality and Survey Measures: Beyond Identity Categories

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What is intersectionality?

A Black feminist theoretical framework

- Intellectual tradition credited to legal scholar **Kimberlé Crenshaw** (published the term, 1989) and sociologist **Dr. Patricia Hill Collins**

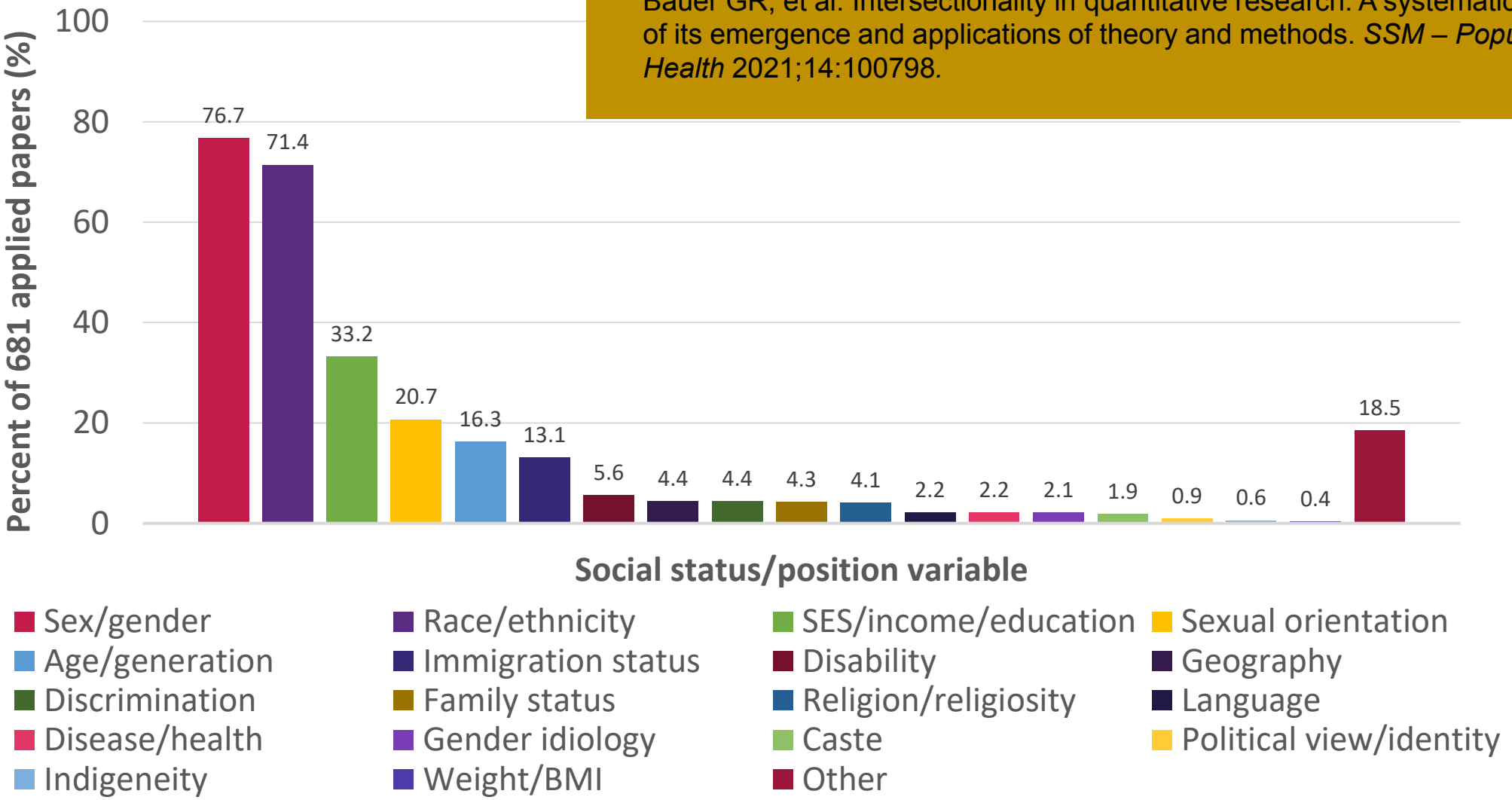
A focus on specificity of experiences at social intersections

- Social identities, positions, processes, structures

An analytic framework for research

- Not a hypothesis
- No power, no intersectionality – emphasize on structural inequity and societal power dynamics

Bauer GR, et al. Intersectionality in quantitative research: A systematic review of its emergence and applications of theory and methods. *SSM – Population Health* 2021;14:100798.



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Practice of Epidemiology

Sex and Gender Multidimensionality in Epidemiologic Research

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Along with age and race, sex has historically been a core stratification and control variable in epidemiologic research. While in recent decades research guidelines and institutionalized requirements have incorporated an approach differentiating biological sex from social gender, neither sex nor gender is itself a unidimensional construct. The conflation of dimensions within and between sex and gender presents a validity issue wherein proxy measures are used for dimensions of interest, often without explicit acknowledgement or evaluation. Here, individual-level dimensions of sex and gender are outlined as a guide for epidemiologists, and 2 case studies are presented. The first case study demonstrates how unacknowledged use of a sex/gender proxy for a sexed dimension of interest (uterine status) resulted in decades of cancer research misestimating risks, racial disparities, and age trends. The second illustrates how a multidimensional sex and gender framework may be applied to strengthen research on coronavirus disease 2019 incidence, diagnosis, morbidity, and mortality. Considerations are outlined, including: 1) addressing the match between measures and theory, and explicitly acknowledging and evaluating proxy use; 2) improving measurement across dimensions and social ecological levels; 3) incorporating multidimensionality into research objectives; and 4) interpreting sex, gender, and their effects as biopsychosocial.

bias; gender identity; gender role; methods; misclassification; sex characteristics; validity

Collapsing multidimensionality into "identity" can lead to construct validity issues

Are you a…?

- ☐ Man
- ☑ Woman

- have a uterus
- have testosterone levels in the female reference range
- were the receptive partner if having anal or vaginal sex
- serve in women's ceremonial or religious roles
- were socialized as girls
- have always lived as girls or women, and will grow old as women
- are the birth parent to their children
- are not at risk of prostate cancer
- typically play women's roles within the family or household

HEALTH BEHAVIORS & HEALTH OUTCOMES

Bauer GR. Sex and gender multidimensionality in epidemiological research. *American Journal of Epidemiology* 2023;192(1):122-132.

Cisnormativity

"the assumption that all dimensions of sex and gender are concordant within individuals, and consistent over the life course"

Sex and gender m… the individual level

cisnormativity

Sex	Gender
• Chromosomal sex • Sex assigned at birth • Hormonal milieu • Reproductive sex • Organ-specific sex • Sexed physiology • Intersex status • Pregnancy	• Gender identity • Intersex identity • Lived gender • Gender role • Metaperceived gender • Masculinity and/or femininity • Internalized gender stigma • Enacted gender stigma • Gender ideology

Bauer GR. Sex and gender multidimensionality in epidemiological research. *American Journal of Epidemiology* 2023;192(1):122-132.

Sex and gender multidimensionality and information validity

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Sex and gender multidimensionality at the individual level

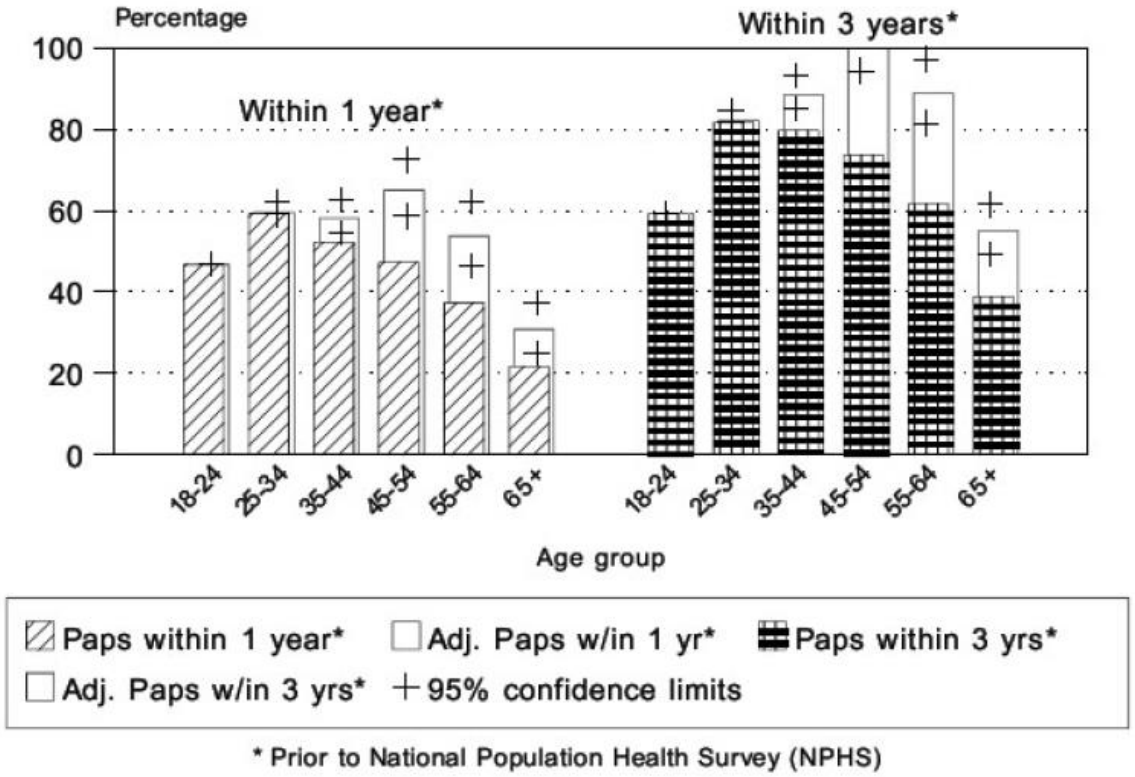
Sex	Gender	Undifferentiated Sex/Gender
• Chromosomal sex • Sex assigned at birth • Hormonal milieu • Reproductive sex • **Organ-specific sex** • Sexed physiology • Intersex status • Pregnancy	• Gender identity • Intersex identity • Lived gender • Gender role • Metaperceived gender • Masculinity and/or femininity • Internalized gender stigma • Enacted gender stigma • Gender ideology	• Administrative sex • **Undifferentiated survey sex/gender** • Computer (AI)-classified sex/gender • Researcher-perceived sex/gender

Bauer GR. Sex and gender multidimensionality in epidemiological research. *American Journal of Epidemiology* 2023;192(1):122-132.

Snider & Beauvais. Pap smear utilization in Canada: Estimates after adjusting the eligible population for hysterectomy status. *Chronic Diseases in Canada*. 1998; 19(1): 19-24.

Example of validity issue with unacknowledged proxy

FIGURE 2
Proportion of women reporting a Pap smear, by age group, unadjusted and adjusted for hysterectomy, Canada



* Prior to National Population Health Survey (NPHS)

2014 onward


Editorial
Racial Disparities in Cervical Cancer: Worse Than We Thought
Heather J. Dalton, MD[1] and John H. Farley, MD[2]
Annals of Epidemiology 24 (2014) 849–854
Contents lists available at ScienceDirect
Annals of Epidemiology
journal homepage: www.annalsofepidemiology.org
Original article
Hysterectomy-corrected incidence rates of cervical and uterine cancers in Massachusetts, 1995 to 2010
Andreas Stang MD, Helen Hawk PhD, Richard Knowlton MS, Susan T. Gershman PhD, Oliver Kuss PhD
Original Article
Hysterectomy-Corrected Cervical Cancer Mortality Rates Reveal a Larger Racial Disparity in the United States
Anna L. Beavis, MD, MPH[1]; Patti E. Gravitt, PhD[2]; and Anne F. Rositch, PhD, MSPH[3]
Clinical Opinion
Global epidemiology of hysterectomy: possible impact on gynecological cancer rates
Anne Hammer, MD; Anne F. Rositch, PhD; Johnny Kahlert, PhD; Patti E. Gravitt, PhD; Jan Blaakaer, DMSc; Mette Søgaard, PhD
Original Article
Increased Age and Race-Specific Incidence of Cervical Cancer After Correction for Hysterectomy Prevalence in the United States From 2000 to 2009
Anne F. Rositch, PhD, MSPH[1,2]; Rebecca G. Nowak, PhD, MPH[3]; and Patti E. Gravitt, PhD, MS[1,4]
AOGS ORIGINAL RESEARCH ARTICLE
The temporal and age-dependent patterns of hysterectomy-corrected cervical cancer incidence rates in Denmark: a population-based cohort study
ANNE HAMMER[1,2], JOHNNY KAHLERT[2,3], ANNE ROSITCH[4], LARS PEDERSEN[2,3], PATTI GRAVITT[5], JAN BLAAKAER[1,2] & METTE SOEGAARD[2,3]

What would happen if we treated multidimensional "identity" measurements just as we treat measurement of other survey variables?

Table A1. 2x2 table for estimating sensitivity and specificity of database-encoded sex/gender as a proxy for uterine status in each stratum within illustrative example

		True Value		
		Uterus +	**No Uterus -**	
Measure (test result)	**Database-encoded Woman +**	P_W [(1 - P_T)(1 - $P_{H\|CW}$)]	P_W [(1 - P_T)($P_{H\|CW}$) + P_T]	P_W
	Database-encoded Man -	P_M [(P_T)(1 - $P_{H\|TM}$)]	P_M [(1 - P_T) + (P_T)($P_{H\|TM}$)]	P_M
		P_W [(1 - P_T)(1 - $P_{H\|CW}$)] + P_M [(P_T)(1 - $P_{H\|TM}$)]	P_W [(1 - P_T)($P_{H\|CW}$) + P_T] + P_M [(1 - P_T) + (P_T)($P_{H\|TM}$)]	P_W + P_M

Here the data coding takes two categories for women and men, with $P_W + P_M = 1.0000$.

<u>Stratum-specific estimates</u>

P_W = proportion database-encoded women

P_M = proportion database-encoded men

$P_{H|CW}$ = proportion of cisgender women who have had hysterectomies

$P_{H|TM}$ = proportion of trans men who have had hysterectomies

P_T = proportion transgender (assumed same, but can adjust if different among women and men)

A = P_W [(1 - P_T)(1 - $P_{H|CW}$)]

B = P_W [(1 - P_T)($P_{H|CW}$) + P_T]

C = P_M [(P_T)(1 - $P_{H|TM}$)]

D = P_M [(1 - P_T) + (P_T)($P_{H|TM}$)]

A = cisgender women without hysterectomy (no trans women with uteri)

B = cisgender women who have had hysterectomy + trans women

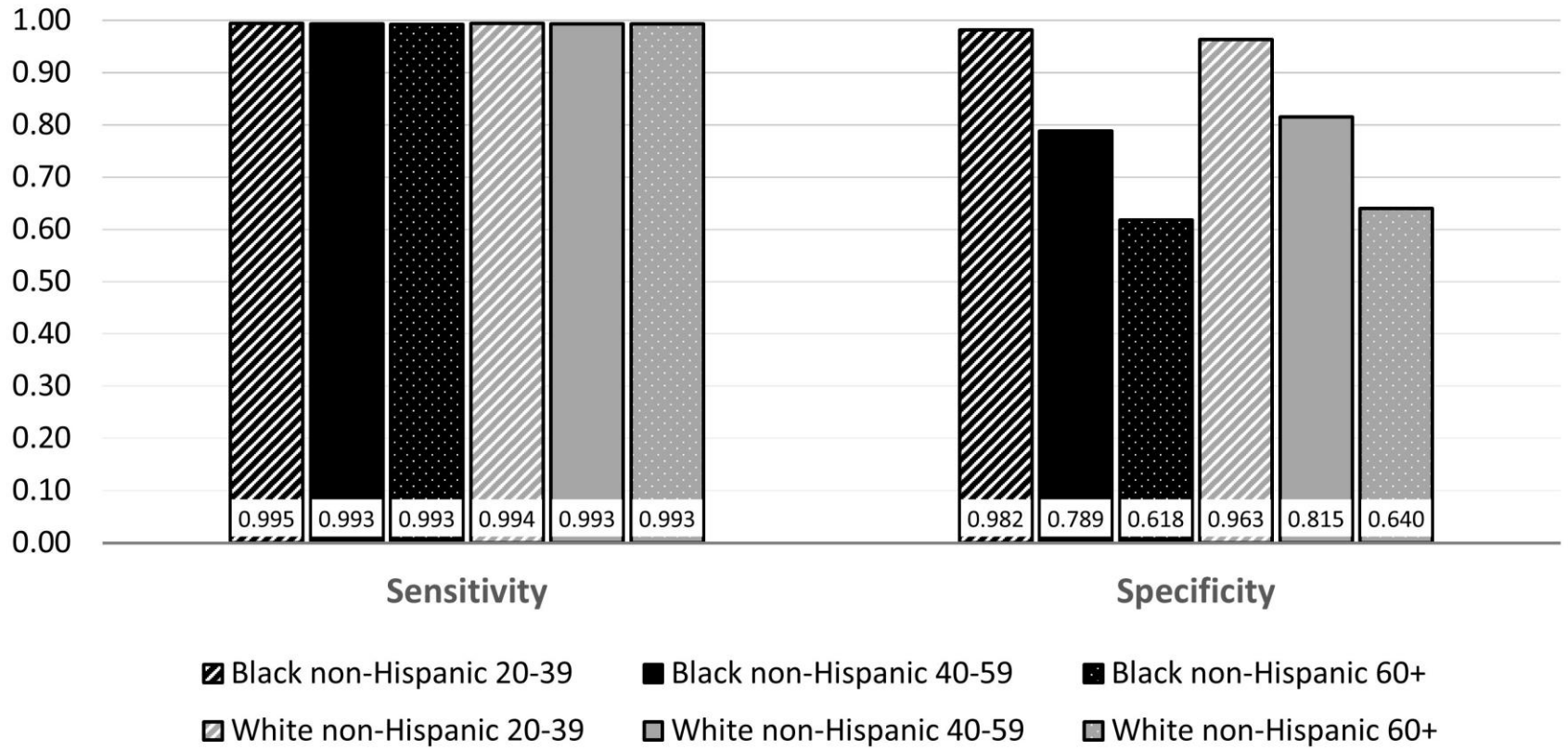
C = trans men with uteri

D = cisgender men and trans men without uteri

Bauer GR. Sex and gender multidimensionality in epidemiological research. *American Journal of Epidemiology* 2023;192(1):122-132.

Bauer GR. Sex and gender multidimensionality in epidemiological research. *American Journal of Epidemiology* 2023;192(1):122-132.

Database sex/gender as a proxy for uterine status in U.S.



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What has been the impact of corrections on US cancer statistics?

DECREASED

- Estimates of unmet need for Pap smears

Racial differences in white-predominant outcomes:

- Incidence of endometrial or uterine cancers

INCREASED

- Incidence of cervical, endometrial and uterine corpus cancers
- Cervical cancer mortality
- Racial differences in Black-predominant outcomes:
  - Incidence of cervical cancer
  - Cervical cancer mortality

Patricia Hill Collins

Social power and interlocking systems of oppression

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Lisa Bowleg

Bowleg L. “Once you’ve blended the cake, you can’t take the parts back to the main ingredients”: Black gay and bisexual men’s descriptions and experiences of intersectionality. *Sex Roles* 2013;68:754-767.

“Well it’s hard for me to separate [my identities]. … once you’ve blended the cake, you can’t take the parts back to the main ingredients.”

Sex and gender multidimensionality at the individual level: A conceptual tool for epidemiologists

Sex	Gender	Undifferentiated Sex/Gender	Gender minority cross-classifications	Sex- or gender-associated factors
• Chromosomal sex • Sex assigned at birth • Hormonal milieu • Reproductive sex • Organ-specific sex • Sexed physiology • Intersex status • Pregnancy	• Gender identity • Intersex identity • Lived gender • Gender role • Metaperceived gender • Masculinity and/or femininity • Internalized gender stigma • Enacted gender stigma • Gender ideology	• Administrative sex • Undifferentiated survey sex/gender • Computer (AI)-classified sex/gender • Researcher-perceived sex/gender	• Gender identity ≠ birth-assigned sex • Lived gender ≠ birth-assigned sex	• Biological factors • Psychological factors • Behavioural factors • Interpersonal factors • Social factors

Bauer GR. Sex and gender multidimensionality in epidemiological research. *American Journal of Epidemiology* 2023;192(1):122-132.

Questions?