



National Institutes of Health
Office of Research on Women's Health



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ORWH COVID-19 Digest: Resources and Consideration for Sex, Gender, and COVID-19 Research

Revision: July 14, 2021



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Introduction

As of July 14, 2021, COVID-19 had claimed over 4 million lives globally, with the number of COVID-19 diagnoses exceeding 188 million. (Center for Systems Science and Engineering, 2021) Many of those who are diagnosed with COVID-19 continue to experience long-term physical and mental health symptoms, ranging from mild to severe, long after recovery. Coupled with biological factors (e.g., age, sex, and genetics) that influence COVID-19 outcomes, social determinants of health (e.g., availability of health care, economic insecurity, and education) influence COVID-19 outcomes. (Shah, Shankar, Schwind, & Sittaramane, 2020; Turner-Musa, Ajayi, & Kemp, 2020) The COVID-19 pandemic has been associated with inequalities in health care access and outcomes. (Bambra, Riordan, Ford, & Matthews, 2020; Mittal & Singh, 2020; Ryan & El Ayadi, 2020; Wenham, Smith, & Morgan, 2020) increased violence against women and girls, (Fraser, 2020; Women, 2020) heightened anxiety and depression, (Hao et al., 2020; C. H. Liu, Zhang, Wong, Hyun, & Hahm, 2020; N. Liu et al., 2020; Troyer, Kohn, & Hong, 2020) and concerning reports of bias and discrimination. (Darling-Hammond et al., 2020; Dhanani & Franz, 2021; M. Liu, 2020; Poteat, Millett, Nelson, & Beyrer, 2020) Although COVID-19 vaccines were developed at a record speed, inequities in access may have contributed to vaccine hesitancy in some communities. (Rouw, Wexler, Kates, & Michaud, 2021; Shetty, 2010)

The COVID-19 pandemic, like parallel pandemics of structural racism (Egede & Walker, 2020; Poteat et al., 2020) and maternal mortality, (Stratton, Gorodetsky, & Clayton, 2021) presents an opportunity to marshal resources, center diverse voices (including leaders who are women and those from diverse racial and ethnic backgrounds), and coordinate research in ways that are more responsive to social determinants of health and health equity. As NIH continues to respond to COVID-19, ORWH and our partners offer the following resources to facilitate alignment of the [NIH strategic response to COVID-19](#) with the [Trans-NIH Strategic Plan for Women's Health Research](#). Applying a multidimensional framework to COVID-19 ensures that the range of biological and social factors that influence women's health—and their intersections—are considered across the life course.

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Overview of Sex & Gender Influences in the COVID-19 Pandemic

COVID-19 presents an unprecedented opportunity to invest in rigorous, responsive, and responsible health research to understand more clearly how to prevent and treat disease for everyone. This pandemic underscores the imperative of systematically considering biological sex and social determinants of health to strengthen our collective capacity to respond equitably to COVID-19—as well as to any future outbreak or pandemic-related threats. Sex has an impact on physiological processes besides reproduction, making it a key variable to consider in research involving humans and vertebrate animals. (Clayton, 2018) “Gender” refers to the socially constructed and enacted roles and behaviors that occur in a historical and cultural context and vary across societies and over time.

In COVID-19 research, considering sex, gender, and other social determinants of health promotes the development and deployment of effective diagnostics, treatments, and interventions that are relevant to the entire population. Approaching COVID-19 research through a multidimensional lens ensures sex



and gender are considered across the life course and in relation to social determinants of health. This digest summarizes key issues in COVID-19 that align with the [Trans-NIH Strategic Plan for Women's Health Research](#) and are relevant to the health of women.

Points to consider:

- Incorporate language on sex, gender, race, ethnicity, sexual orientation and gender identity (SOGI), socioeconomic status, and other social determinants of health into funding opportunity announcements (FOAs).
- Collect, report, and disaggregate data whenever feasible, particularly using variables such as sex, gender, SOGI, race, ethnicity, age, socioeconomic status, and geographic location.

Sex & gender resources:

- Bhopal, R. (2020). COVID-19 worldwide: We need precise data by age group and sex urgently. *The BMJ*, 369, m1366. <https://doi.org/10.1136/bmj.m1366>
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Resource compendiums

- [COVID-19 and Gender Resources](#)
- [PMNCH compendium of COVID-19 related partner resources on women's, children's and adolescents' health](#)
- [COVID-19 Resources: Gender Data, Gender, and Data](#)
- [The COVID-19 Sex-Disaggregated Data Tracker](#)
- [NIH iSearch COVID-19 portfolio](#)

1. Sex differences

Sex is a biological variable, defined by the chromosomal complement, gonads, sex hormones, external genitalia, and internal reproductive organs. Sex-disaggregated COVID-19 data are tracked by the Global



Health 50/50 initiative.(Global Health 50/50, 2020) The most recent data show that although the proportion of confirmed cases between the sexes is roughly equal, the proportion of deaths is higher in males.(Global Health 50/50, 2020) This male bias in COVID-19 vulnerability has several possible biological explanations(Scully, Haverfield, Ursin, Tannenbaum, & Klein, 2020): females' more robust innate adaptive immune responses;(Bartz et al., 2020) sex-specific signaling through toll-like receptors;(Khan, Summers, Helbert, & Arkwright, 2010) and potential disease modulation through TMPRSS2, an androgen-regulated protease.(Asselta, Paraboschi, Mantovani, & Duga, 2020)

Potential research topics:

- Sex differences in vaccine efficacy(Aaby et al., 2020)
- Sex differences in novel therapeutics(Majdic, 2020)
- Sex differences in biomarkers(Haitao et al., 2020)
- Sex differences in therapeutics(Ambrosino et al., 2020)
- Possible sex-specific mechanisms of transmission (e.g., SARS-CoV-2 is found in semen(Li, Jin, Bao, Zhao, & Zhang, 2020) but not vaginal fluid(Qiu et al., 2020))
- Sex-specific differences in immunity across the life course (e.g., pre- and post-menopause)(Ding et al., 2020)

Sex differences resources:

- Aaby, P., et al. (2020). The non-specific and sex-differential effects of vaccines. *Nature Reviews Immunology*, 20(8), 464–470. <https://doi.org/10.1038/s41577-020-0338-x>
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2. Gender's role in the COVID-19 pandemic

“Gender” refers to socially constructed roles, behaviors, expressions, and identities of girls, women, boys, men, and gender-diverse people. Like biology, gender and gender identity play a significant role in health outcomes. Therefore, in COVID-19 research, as in many areas, gender emerges as an important consideration. (Gausman & Langer, 2020; Spagnolo, Manson, & Joffe, 2020) Data from other disasters and public health emergencies indicate that women experience significant mental health and economic effects because of their unpaid or underpaid caregiver roles, (Bell & Folkerth, 2016; Gausman & Langer, 2020; Nugent et al., 2019) and the risk of intimate partner violence (IPV) and gender-based violence increases during widespread quarantines. (Fraser, 2020; Lancet, 2020) At the intersection of sex and gender, women faced decreased autonomy over their sexual and reproductive health during previous public health emergencies, contributing to increased rates of maternal and neonatal mortality as an indirect health consequence. (Chattu & Yaya, 2020; Riley, Sully, Ahmed, & Biddlecom, 2020)

Potential research topics:

- Intersectional analysis of differences in risk and resilience based on gender, race, ethnicity, socioeconomic status, age, and other social determinants of health
- Interventions targeting health behaviors with known gender differences (e.g., handwashing, smoking, sleep, exercise)



- Research on pandemic-related health risks and outcomes in transgender and gender-nonconforming women (e.g., increased homelessness, housing instability, and denial of admittance into shelters)
- Development and testing of psychosocial measures that are responsive to gender, sex, race, ethnicity, age, and other social determinants of health
- Gender differences in COVID-19 stress and coping, including changes in patterns of alcohol and substance use
- COVID-19's impact on informal and unpaid caregiving
- The impact of COVID-19 on medically underserved regions and vulnerable populations (e.g., pregnant women, people experiencing homelessness, prison populations, people with disabilities, and those in shelters or residential treatment settings)

Gender and COVID-19 resources:

- Bali, S., et al. (2020). Off the back burner: Diverse and gender-inclusive decision-making for COVID-19 response and recovery. *BMJ Global Health*, 5(5). <https://doi.org/10.1136/bmjgh-2020-002595>
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3. Racial and ethnic disparities

Members of historically marginalized groups—including members of racial and ethnic minority populations, people with underlying health conditions, and individuals experiencing poverty/low income—are disproportionately affected by virus-related complications and death.(Kim & Bostwick, 2020; Wadhera et al., 2020) COVID-19 continues to illuminate barriers communities of color face in accessing testing and treatment—digital inequalities,(Beaunoyer, Dupéré, & Guitton, 2020) structural racism,(Economic Policy Institute, 2020; Egede & Walker, 2020) medical mistrust,(Williams, 2020) and the absence of culturally responsive health communication materials.(Alsan, Stantcheva, Yang, & Cutler, 2020; Velasquez, Uppal, & Perez, 2020) NIH has taken steps to involve historically marginalized communities in COVID-19 research, including research on diagnostics ([RADx-UP](#)), vaccines ([CoVPN's Faith Initiative](#)), and understanding variants ([NOT-GM-21-031](#)).

Underscoring the importance of analyzing data by sex and race, a recent analysis found that in the U.S., COVID-19 mortality rates of Black women exceed those of White and Asian American/Pacific Islander men.(Rushovich et al., 2021) Intersectional analyses that consider stigma, bias, violence, minority stress, racial weathering, structural racism, and other factors that affect the health of BIHPOC (Black, Indigenous, Hispanic, and people of color) communities can elucidate the connections among policies, practices, and health outcomes. Multidimensional and intersectional approaches also reveal that LGBTQ+ people of color have been disproportionately harmed economically by the pandemic—more likely to have become unemployed, had their work hours reduced, and asked for delays in paying their rent or bills.(Bibi, 2020)

Potential research topics:

- Intersectional analysis of differences in risk and resilience based on gender, race, ethnicity, socioeconomic status, age, and other social determinants of health, such as types of employment, insurance status, living arrangements, etc.
- Development and implementation of culturally responsive health communication materials on, for example, social distancing, mask wearing, and vaccines
- Community-level interventions to address disparities in testing and/or vaccinations
- Developing and deploying campaigns to address misinformation/distrust and combat vaccine hesitancy in communities of color



- The influence of structural factors on vaccine access and development of structural and/or multilevel interventions to increase vaccine access and reduce vaccine hesitancy
- The role of artificial intelligence (AI) in identifying and mitigating health disparities; mitigating coding biases in AI
- Differences in the use of health care services and COVID-19 testing sites by race and ethnicity
- The role of structural and systemic racism in pandemic-related health disparities
- Biological differences that foster higher mortality

Racial and ethnic disparities resources:

- Alsan, M., et al. (2020). Disparities in coronavirus 2019 reported incidence, knowledge, and behavior among US adults. *JAMA Network Open*, 3(6), e2012403. <https://doi.org/10.1001/jamanetworkopen.2020.12403>
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- Bhala, N., et al. (2020). Sharpening the global focus on ethnicity and race in the time of COVID-19. *The Lancet*, 395(10238), 1673–1676. [https://doi.org/10.1016/S0140-6736\(20\)31102-8](https://doi.org/10.1016/S0140-6736(20)31102-8)
- Bibi, E. (2020, May 21). *HRC and PSB Research release data on the economic impact of COVID-19 on LGBTQ communities of color*. Human Rights Campaign. <https://www.hrc.org/blog/hrc-and-psb-research-release-data-on-economic-impact-of-covid-19-on-lgbtq>
- Blow, C. M. (2020, April 1). The racial time bomb in the COVID-19 crisis. *The New York Times*. <https://www.nytimes.com/2020/04/01/opinion/coronavirus-black-people.html>
- Egede, L. E., & Walker, R. J. (2020). Structural racism, social risk factors, and COVID-19 — a dangerous convergence for Black Americans. *The New England Journal of Medicine*, 383(12), e77. <https://doi.org/10.1056/NEJMp2023616>
- Fisher, M., & E. B. (2020, March 15). As coronavirus deepens inequality, inequality worsens its spread. *The New York Times*. <https://www.nytimes.com/2020/03/15/world/europe/coronavirus-inequality.html>
- Gould, E., & Wilson, V. (2020, June 1). *Black workers face two of the most lethal preexisting conditions for coronavirus—racism and economic inequality*. Economic Policy Institute. <https://www.epi.org/publication/black-workers-covid>
- Hankivsky, O., & Kapilashrami, A. (2020). *Beyond sex and gender analysis: An intersectional view of the COVID-19 pandemic outbreak and response*. The University of Melbourne and Queen Mary University of London. https://mbspgh.unimelb.edu.au/_data/assets/pdf_file/0011/3334889/Policy-brief_v3.pdf
- Khunti, K., et al. (2020). Is ethnicity linked to incidence or outcomes of COVID-19? *The BMJ*, 47(4), 509–513. <https://doi.org/10.1136/bmj.m1548>
- Krogstad, J. M., Gonzalez-Barrera, A., & Lopez, M. H. (2020, March 24). *Hispanics more likely than Americans overall to see coronavirus as a major threat to health and finances*. Pew Research Center. <https://www.pewresearch.org/fact-tank/2020/03/24/hispanics-more-likely-than-americans-overall-to-see-coronavirus-as-a-major-threat-to-health-and-finances>
- Laughland, O., & Zanolli, L. (2020, 25 April). Why is coronavirus taking such a deadly toll on black Americans? *The Guardian*. <https://www.theguardian.com/world/2020/apr/25/coronavirus-racial-disparities-african-americans>
- Laurencin, C. T., & McClinton, A. (2020). The COVID-19 pandemic: A call to action to identify and address racial and ethnic disparities. *Journal of Racial and Ethnic Health Disparities*, 7(3), 398–402. <https://doi.org/10.1007/s40615-020-00756-0>
- Lemke, M. K., & Brown, K. K. (2020). Syndemic perspectives to guide Black maternal health research and prevention during the COVID-19 pandemic. *Maternal and Child Health Journal*. <https://doi.org/10.1007/s10995-020-02983-7>
- Poteat, T., et al. (2020). Understanding COVID-19 risks and vulnerabilities among black communities in America: The lethal force of syndemics. *Annals of Epidemiology*, 47, 1–3. <https://doi.org/10.1016/j.annepidem.2020.05.004>



- Price-Haywood, E. G., et al. (2020). Hospitalization and mortality among Black patients and White patients with Covid-19. *The New England Journal of Medicine*, 382(26), 2534–2543. <https://doi.org/10.1056/NEJMsa2011686>
- Rushovich, T., et al. (2021). Sex disparities in COVID-19 mortality vary across US racial groups. *Journal of General Internal Medicine*. <https://doi.org/10.1007/s11606-021-06699-4>
- Shah, M., Sachdeva, M., & Dodiuk-Gad, R. P. (2020). COVID-19 and racial disparities. *Journal of the American Academy of Dermatology*, 83(1), e35. <https://doi.org/10.1016/j.jaad.2020.04.046>
- Solomon, D., & Hamilton, D. (2020, March 19). *The coronavirus pandemic and the racial wealth gap*. Center for American Progress. <https://www.americanprogress.org/issues/race/news/2020/03/19/481962/coronavirus-pandemic-racial-wealth-gap>
- Souch, J. M., & Cossman, J. S. (2021). A commentary on rural-urban disparities in COVID-19 testing rates per 100,000 and risk factors. *Journal of Rural Health*, 37(1), 188–190. <https://doi.org/10.1111/jrh.12450>
- Stratton, P., Gorodetsky, E., & Clayton, J. (2021). Pregnant in the United States in the COVID-19 pandemic: A collision of crises we cannot ignore. *Journal of the National Medical Association*. <https://doi.org/10.1016/j.jnma.2021.03.008>
- Velasquez, D., Uppal, N., & Perez, N. (2020, April 2). Equitable access to health information for non-English speakers amidst the novel coronavirus pandemic. *Health Affairs Blog*. <https://www.healthaffairs.org/doi/10.1377/hblog20200331.77927/full>
- Wadhera, R. K., et al. (2020). Variation in COVID-19 hospitalizations and deaths across New York City boroughs. *JAMA*, 323(21), 2192–2195. <https://doi.org/10.1001/jama.2020.7197>
- Webb Hooper, M., Napoles, A. M., & Perez-Stable, E. J. (2020). COVID-19 and racial/ethnic disparities. *JAMA*, 323(24), 2466–2467. <https://doi.org/10.1001/jama.2020.8598>
- Williams, J. P. (2020, March 25). Rumor, disparity and distrust: Why Black Americans face an uphill battle against COVID-19. *U.S. News & World Report*. <https://www.usnews.com/news/healthiest-communities/articles/2020-03-25/why-black-americans-face-an-uphill-battle-against-the-coronavirus>

4. Sexual and gender minority populations

Pinpointing the pandemic-related and specific health needs of sexual and gender minorities (SGMs; for the NIH definition, please see [NOT-OD-19-139](#)) has been impeded by infrequent and inconsistent collection of data on intersex status and sexual orientation and gender identity (SOGI). More than a year into the pandemic, the evidence base on the specific risks and concerns of SGM individuals pertaining to SARS-CoV-2 vulnerability, COVID-19 severity, and the larger issues surrounding them remains wanting but is growing. The Centers for Disease Control and Prevention (CDC) documented that lesbian, gay, and bisexual people exhibit higher prevalence of several underlying chronic conditions associated with severe COVID-19 than heterosexual people, including asthma and chronic obstructive pulmonary disease. This disparate prevalence is highest in sexual minorities who are also members of an underserved racial or ethnic group for the majority of conditions investigated. (Heslin & Hall, 2021) The Human Rights Campaign (HRC) highlighted in a 2020 report that SGM individuals more frequently work in industries that have high coronavirus exposure and that are adversely affected by the pandemic (Whittington, Hadfield, & Calderón, 2020). HRC found that SGMs were more likely to have their work hours reduced, to become unemployed, and to have to adjust their budgets and that Black SGMs were at even higher risk of facing employment and financial hardships. (Human Rights Campaign, 2020) SGMs are also more likely to have problems accessing key health services (such as mental health services, gender-affirming care, and COVID-19-related care), in part because of higher rates of poverty



and lower likelihood of having medical coverage, particularly among SGM adults of color and especially transgender adults of color.(Whittington et al., 2020)

SGM youths, who have higher rates of homelessness and unstable housing, may be at higher risk of not being able to access critical resources provided by schools and child welfare agencies, many of which have been closed because of COVID-19, and may be forced to spend more time in unsupportive home environments. Older SGM people may experience exacerbated social isolation and issues accessing or utilizing online technologies, reducing opportunities to engage in telehealth or vaccination sign-up.(National LGBTQIA+ Health Education Center, 2021) One study of 1,380 SGM individuals and their heterosexual and/or cisgender peers showed that SGM individuals had more physical symptoms associated with COVID-19; more adverse psychological symptoms, such as anxiety, depression, and rumination; and lower perceived social support, including emotional support and positive social interactions.(Moore, Wierenga, Prince, Gillani, & Mintz, 2021) The same study demonstrated higher COVID-19-related job loss and financial difficulty for SGMs compared with non-SGMs.

Evidence indicates that SGM populations have elevated stress and experience greater stigma compared with their heterosexual and cisgender counterparts.(DiPlacido & CR, 2020; Hatzenbuehler & Pachankis, 2016; Valentine & Shipherd, 2018) This may predispose SGM populations to unique harms arising from typical adverse consequences posed by the pandemic,(Salerno, Williams, & Gattamorta, 2020; Silliman Cohen & Bosk, 2020) such as disruption of personal support systems, unplanned changes in living situations, and economic and employment challenges.(Whittington et al., 2020) For example, in countries that limit movement by specifying the days on which men and women can leave their homes, anecdotal evidence indicates that transgender, queer, and nonbinary individuals are experiencing increases in violence and police harassment.(Perez-Brumer & Silva-Santisteban, 2020; Reuters, 2020) Intersectional analyses suggest that the economic effects of COVID-19 are greater for LGBTQ+ people of color than for White LGBTQ+ individuals, further underscoring the value of multidimensional approaches to understanding and addressing COVID-19.(Bibi, 2020)

To adequately capture the economic and social effects of COVID-19 on SGM communities, research will need to explicitly consider LGBTQ+ individuals when designing measures and studies (e.g., examining the impact of school closures on professional productivity in same-gender as well as mixed-gender households). Interventions focused on subgroups within the SGM community are especially needed to increase access to quality and equitable health care and to address both physical and mental health concerns for all SGMs. To date, a paucity of research explores the wide-ranging effects of this pandemic on SGM women, and more research is needed in this critical area.

Potential research topics:

- Collection of SOGI data
- Social and behavioral processes that affect SARS-CoV-2 infection vulnerability and COVID-19 severity in SGM populations, including epidemiology and transmission risk in men who have sex with men



- The effects of COVID-19 on healthy and risky behaviors (e.g., smoking, substance use, and their cessation, as well as engagement and disengagement in sex work)
- Intersectional and community-based research to understand the effects of the pandemic on SGMs of color, SGMs living in rural settings, SGMs with low socioeconomic status, and SGMs in different living circumstances, such as those who are in foster care, those who are incarcerated, and those who are experiencing homelessness
- The impact of exogenous hormones/gender-affirming therapy on COVID-19 prevalence, progression, and outcomes
- The psychosocial effects of the pandemic (e.g., anxiety, stress, and sleep disturbance) on communities with histories of pandemic-induced trauma (e.g., long-term survivors of HIV)
- Qualitative and quantitative projects considering experiences of SGM caregivers and caregivers of SGM individuals (Boehmer, Clark, Heeren, Showalter, & Fredman, 2018)
- The reach, access, engagement, and effectiveness of relevant health intervention strategies targeting SGMs
- Mental health implications for LGBTQ+ teens who are isolated with families
- Developing and testing interventions in a variety of formats (e.g., virtual and mobile health [mHealth]) to offer psychosocial support and stigma reduction tailored to SGM individuals

Sexual and gender minorities resources:

- Beima-Sofie, K., et al. (2020). "Keep it going if you can": HIV service provision for priority populations during the COVID-19 pandemic in Seattle, WA. *AIDS and Behavior*, 24(10), 2760–2763. <https://doi.org/10.1007/s10461-020-02902-5>
- Bibi, E. (2020, May 21). *HRC and PSB Research release data on the economic impact of COVID-19 on LGBTQ communities of color*. Human Rights Campaign. <https://www.hrc.org/blog/hrc-and-psb-research-release-data-on-economic-impact-of-covid-19-on-lgbtq>
- Blanco, J. L., et al. (2020). COVID-19 in patients with HIV: Clinical case series. *The Lancet HIV*, 7(5), e314–e316. [https://doi.org/10.1016/S2352-3018\(20\)30111-9](https://doi.org/10.1016/S2352-3018(20)30111-9)
- Boehmer, U., et al. (2018). Differences in caregiving outcomes and experiences by sexual orientation and gender identity. *LGBT Health*, 5(2), 112–120. <https://doi.org/10.1089/lgbt.2017.0144>
- DiPlacido, J., & Fallahi, C. (2020). The Oxford handbook of sexual and gender minority health. *Stigma and sexual and gender minority mental health* (pp. 419). Oxford University Press.
- Fish, J. N., et al. (2020). "I'm kinda stuck at home with unsupportive parents right now": LGBTQ youths' experiences with COVID-19 and the importance of online support. *Journal of Adolescent Health*, 67(3), 450–452. <https://doi.org/10.1016/j.jadohealth.2020.06.002>
- Harkness, A., Behar-Zusman, V., & Safren, S. A. (2020). Understanding the impact of COVID-19 on Latino sexual minority men in a US HIV hot spot. *AIDS and Behavior*, 24(7), 2017–2023. <https://doi.org/10.1007/s10461-020-02862-w>
- Heslin, K. C., & Hall, J. E. (2021). Sexual orientation disparities in risk factors for adverse COVID-19-related outcomes, by race/ethnicity — Behavioral Risk Factor Surveillance System, United States, 2017–2019. *Morbidity and Mortality Weekly Report*, 70(5), 149–154. <https://doi.org/10.15585/mmwr.mm7005a1>
- Hatzenbuehler, M. L., & Pachankis, J. E. (2016). Stigma and minority stress as social determinants of health among lesbian, gay, bisexual, and transgender youth: Research evidence and clinical implications. *Pediatric Clinics of North America*, 63(6), 985–997. <https://doi.org/10.1016/j.pcl.2016.07.003>



- Heslin, K. C., & Hall, J. E. (2021). Sexual orientation disparities in risk factors for adverse COVID-19-related outcomes, by race/ethnicity — Behavioral Risk Factor Surveillance System, United States, 2017–2019. *Morbidity and Mortality Weekly Report*, 70(5), 149–154. <https://doi.org/10.15585/mmwr.mm7005a1>
- Human Rights Campaign. (2020). *The economic impact of COVID-19 on Black LGBTQ people*. <https://hrc-prod-requests.s3-us-west-2.amazonaws.com/files/assets/resources/COVID19-EconImpact-Black-August2020.pdf?mtime=20200810115607&focal=none>
- Moore, S. E., et al. (2021). Disproportionate impact of the COVID-19 pandemic on perceived social support, mental health and somatic symptoms in sexual and gender minority populations. *Journal of Homosexuality*, 68(4), 577–591. <https://doi.org/10.1080/00918369.2020.1868184>
- National LGBTQIA+ Health Education Center. (2021). *The COVID-19 pandemic: Supporting LGBTQIA+ patients*. <https://www.lgbtqihealtheducation.org/wp-content/uploads/2021/03/COVID-19-and-LGBTQIA-People-Brief-2021.pdf>
- Perez-Brumer, A., & Silva-Santisteban, A. (2020). COVID-19 policies can perpetuate violence against transgender communities: Insights from Peru. *AIDS and Behavior*, 24, 2477–2479. <https://doi.org/10.1007/s10461-020-02889-z>
- Cobb, J. S. (2020, May 5). *Transgender people face discrimination, violence amid Latin American quarantines*. Reuters. <https://www.reuters.com/article/us-health-coronavirus-latam-lgbt/transgender-people-face-discrimination-violence-amid-latin-american-quarantines-idUSKBN22H2PT>
- Salerno, J. P., et al. (2020). Sexual and gender minority stress amid the COVID-19 pandemic: Implications for LGBTQ young persons' mental health and well-being. *Public Health Reports*, 135(6), 721–727. <https://doi.org/10.1177/0033354920954511>
- Salerno, J. P., Williams, N. D., & Gattamorta, K. A. (2020). LGBTQ populations: Psychologically vulnerable communities in the COVID-19 pandemic. *Psychological Trauma*, 12(S1), S239–S242. <https://doi.org/10.1037/tra0000837>
- Sanchez, T. H., et al. (2020). Characterizing the impact of COVID-19 on men who have sex with men across the United States in April, 2020. *AIDS and Behavior*, 24(7), 2024–2032. <https://doi.org/10.1007/s10461-020-02894-2>
- Silliman Cohen, R. I., & Bosk, E. A. (2020). Vulnerable youth and the COVID-19 pandemic. *Pediatrics*, 146(1), e20201306. <https://doi.org/10.1542/peds.2020-1306>
- Valentine, S. E., & Shipherd, J. C. (2018). A systematic review of social stress and mental health among transgender and gender non-conforming people in the United States. *Clinical Psychology Review*, 66, 24–38. <https://doi.org/10.1016/j.cpr.2018.03.003>
- Wang, Y., et al. (2020). Health care and mental health challenges for transgender individuals during the COVID-19 pandemic. *The Lancet Diabetes & Endocrinology*, 8(7), 564–565. [https://doi.org/10.1016/S2213-8587\(20\)30182-0](https://doi.org/10.1016/S2213-8587(20)30182-0)
- Whittington, C., Hadfield, K., & Calderón, C. (2020). *The lives & livelihoods of many in the LGBTQ community are at risk amidst COVID-19 crisis*. Human Rights Campaign Foundation. <https://assets2.hrc.org/files/assets/resources/COVID19-IssueBrief-032020-FINAL.pdf>

5. Intimate partner violence and gender-based violence

To slow the spread of COVID-19, States and national governments have implemented restrictions on citizens' movement. Many advocates, practitioners, and researchers have expressed concerns that these measures would increase the risk for domestic and intimate partner violence (IPV). (Chisolm, 2020; Fraser, 2020) During and after previous public health emergencies or natural disasters, women have faced heightened vulnerability to abuse and gender-based violence. (Bell & Folkerth, 2016; Sloand et al., 2015)

Evidence indicates that concerns about increases in IPV during the coronavirus pandemic are well founded. (van Gelder et al., 2020) In the United States, calls to domestic violence hotlines spiked during



State-mandated lockdowns. Similar patterns were reported in the U.K., France, Singapore, Argentina, and China.(van Gelder, 2020; Chandan 2020; UN Women, 2020; Mazza, 2020) Access to health services, including IPV support services, is limited while movement is restricted,(Fraser, 2020) which increases the urgency of identifying and responding to IPV. As part of a holistic response to violence against women—including community-based COVID-19 diagnostic settings—the entire health care system can act in a coordinated way to intervene on behalf of victims of violence by incorporating screening into all clinical encounter–related diagnostics.(García-Moreno et al., 2015; Viergever, Thorogood, Wolf, & Durand, 2018)

Potential research topics:

- Development and testing of culturally competent, responsive, and community-based IPV reduction interventions aimed at perpetrators
- Developing and testing IPV resources to include in COVID-19 communication and counseling materials
- The influence of IPV on willingness and ability to get tested for COVID-19
- The feasibility, acceptability, and practicality of IPV screening in the context of COVID-19 diagnostics
- The prevalence and outcomes of online violence/cyberstalking during times of increased social isolation

IPV and gender-based violence resources:

Bell, S. A., & Folkerth, L. A. (2016). Women's mental health and intimate partner violence following natural disaster: A scoping review. *Prehospital and Disaster Medicine*, 31(6), 648–657.

<https://doi.org/10.1017/S1049023X16000911>

Chandan, J. S., et al. (2020). COVID-19: A public health approach to manage domestic violence is needed. *The Lancet Public Health*, 5(6), E309–E309. [https://doi.org/10.1016/S2468-2667\(20\)30112-2](https://doi.org/10.1016/S2468-2667(20)30112-2)

Chisolm, N. J. (2020, March 27). COVID-19 creates added danger for women in homes with domestic violence. *Colorlines*. <https://www.colorlines.com/articles/covid-19-creates-added-danger-women-homes-domestic-violence>

Danitz, S. B., et al. (2019). When user-centered design meets implementation science: Integrating provider perspectives in the development of an intimate partner violence intervention for women treated in the United States' largest integrated healthcare system. *BMC Women's Health*, 19(1), 145.

<https://doi.org/10.1186/s12905-019-0837-8>

El-Bassel, N., et al. (2007). Intimate partner violence prevalence and HIV risks among women receiving care in emergency departments: Implications for IPV and HIV screening. *Emergency Medicine Journal*, 24(4), 255–259. <https://doi.org/10.1136/emj.2006.041541>

Enriquez, M., et al. (2010). Development and feasibility of an HIV and IPV prevention intervention among low-income mothers receiving services in a Missouri day care center. *Violence Against Women*, 16(5), 560–578.

<https://doi.org/10.1177/1077801210366869>

Fraser, E. (2020). *Impact of COVID-19 pandemic on violence against women and girls*. VAWG Helpdesk Research Report No. 284. <http://www.sddirect.org.uk/media/1881/vawg-helpdesk-284-covid-19-and-vawg.pdf>

García-Moreno, C., et al. (2015). The health-systems response to violence against women. *The Lancet*, 385(9977), 1567–1579. [https://doi.org/10.1016/S0140-6736\(14\)61837-7](https://doi.org/10.1016/S0140-6736(14)61837-7)

Heller, M., et al. (2018). Gender-based violence, physiological stress, and inflammation: A cross-sectional study. *Journal of Women's Health (Larchmont)*, 27(9), 1152–1161. <https://doi.org/10.1089/jwh.2017.6743>



- John, N., et al. (2020). Lessons never learned: Crisis and gender-based violence. *Developing World Bioethics*, 20(2), 65–68. <https://doi.org/10.1111/dewb.12261>
- Klevens, J., et al. (2015). Does screening or providing information on resources for intimate partner violence increase women's knowledge? Findings from a randomized controlled trial. *Journal of Womens Health, Issues and Care*, 4(2). <https://doi.org/10.4172/2325-9795.1000181>
- Mazza, M., et al. (2020). Danger in danger: Interpersonal violence during COVID-19 quarantine. *Psychiatry Research*, 289, 113046. <https://doi.org/10.1016/j.psychres.2020.113046>
- Mittal, S., & Singh, T. (2020). Gender-based violence during COVID-19 pandemic: A mini-review. *Frontiers in Global Women's Health*, 1(4). <https://doi.org/10.3389/fgwh.2020.00004>
- RAINN. (2020, April 16). *For the first time ever, minors make up half of visitors to National Sexual Assault Hotline*. <https://www.rainn.org/news/first-time-ever-minors-make-half-visitors-national-sexual-assault-hotline>
- Raissi, S. E., et al. (2015). Implementing an intimate partner violence (IPV) screening protocol in HIV care. *AIDS Patient Care and STDs*, 29(3), 133–141. <https://doi.org/10.1089/apc.2014.0306>
- Sloand, E., et al. (2015). Barriers and facilitators to engaging communities in gender-based violence prevention following a natural disaster. *Journal of Health Care for the Poor and Underserved*, 26(4), 1377–1390. <https://doi.org/10.1353/hpu.2015.0133>
- Swales, A. L., Lehman, E. B., & McCall-Hosenfeld, J. S. (2017). Intimate partner violence discussions in the healthcare setting: A cross-sectional study. *Preventive Medicine Reports*, 8, 215–220. <https://doi.org/10.1016/j.pmedr.2017.10.017>
- UN Women. (2020). *COVID-19 and ending violence against women and girls*. <https://www.unwomen.org/-/media/headquarters/attachments/sections/library/publications/2020/issue-brief-covid-19-and-ending-violence-against-women-and-girls-en.pdf?la=en&vs=5006>
- van Gelder, N., et al. (2020). COVID-19: Reducing the risk of infection might increase the risk of intimate partner violence. *EClinicalMedicine*, 21, 100348. <https://doi.org/10.1016/j.eclinm.2020.100348>
- Viergever, R. F., et al. (2018). Supporting ALL victims of violence, abuse, neglect or exploitation: Guidance for health providers. *BMC International Health and Human Rights*, 18(1), 39. <https://doi.org/10.1186/s12914-018-0178-y>

6. Pregnancy, breastfeeding, and reproductive health

Pregnancy is associated with alterations in the immune system, and pregnant people are susceptible to respiratory pathogens and to the development of severe pneumonia. Changes in immunity during pregnancy may increase susceptibility to SARS-CoV-2 infection, especially if chronic diseases or pregnancy complications are present.(Wastnedge et al., 2021) Emerging data suggest that pregnant people with COVID-19 are at increased risk for severe disease,(Zambrano et al., 2020) as has been the case with other respiratory viral diseases.(Schwartz & Graham, 2020) The Centers for Disease Control and Prevention (CDC) reports higher rates of preterm delivery and other adverse pregnancy outcomes among pregnant people who have COVID-19;(Woodworth et al., 2020) CDC continues to report updated data on birth and infant outcomes through the [COVID Data Tracker](#).

There have been few published clinical cases investigating the possibility of vertical transmission in pregnant people with severe COVID-19.(Alzamora et al., 2020) No evidence for intrauterine infection caused by vertical transmission in women who develop COVID-19 pneumonia during the third trimester of pregnancy has been suggested from these limited series of patients.(H. Chen et al., 2020; Yan et al., 2020) Current meta-analysis data also support a lack of evidence for intrauterine transmission of COVID-19 from infected pregnant women to their fetuses.(Di Mascio et al., 2020; Kotlar, Gerson, Petrillo, Langer, & Tiemeier, 2021) Regarding lactation, limited data have suggested that SARS-CoV-2 is not



transmitted through breast milk,(Huijun Chen et al., 2020) but numbers on which to determine evidence-based recommendations are too small.

Pandemic-related health systems changes affected prenatal and postpartum care(Burgess, Breman, Bradley, Dada, & Burcher, 2021; Futterman et al., 2021; Kotlar et al., 2021) and shaped hospitals' labor and delivery practices. Fear of vertical transmission as well as a need to protect health care workers led to policies of isolation in labor and delivery units, where pregnant people were often separated from not only caregivers but also newborns.(Elizabeth Mollard & Wittmaack, 2021) The long-term effect of these policies is not yet known. Reports from France found decreases in preterm delivery during COVID-19 lockdowns,(Simon et al., 2021) perhaps because of fewer iatrogenic interventions in the context of less medical care overall.

Potential research topics:

- The impact of COVID-19 on home birth versus hospital birth, including rural–urban, racial, and socioeconomic status differences in trends
- Long-term mental health outcomes related to pregnancy/delivery during the COVID-19 pandemic, including postpartum depression, symptoms of post-traumatic stress disorder, and breastfeeding decisions
- The reach, access, engagement, and effectiveness of health intervention strategies for pregnant women
- Psychosocial effects of COVID-19 on labor and delivery personnel
- Indirect effects of COVID-19 on maternal morbidity and mortality and infant mortality
- Trends in cesarean section rates throughout the pandemic in comparison with the pre-pandemic period
- Changes in access to and engagement with sexual and reproductive health services during the pandemic, with attention to regional variation and women in understudied, underrepresented, and underreported (U3) populations (e.g., those with low socioeconomic status, those who live in rural areas, and those who are members of underserved racial and ethnic groups)
- The role of doulas and emotional support personnel during pregnancy and postpartum
- Vaccine efficacy and safety during pregnancy(Gray et al, 2021; Scully, 2021)

Pregnancy and breastfeeding resources:

- Alzamora, M. C., et al. (2020). Severe COVID-19 during pregnancy and possible vertical transmission. *American Journal of Perinatology*, 37(8), 861–865. <https://doi.org/10.1055/s-0040-1710050>
- Breslin, N., et al. (2020). Coronavirus disease 2019 in pregnancy: Early lessons. *American Journal of Obstetrics & Gynecology MFM*, 2(2), 100111. <https://doi.org/10.1016/j.ajogmf.2020.100111>
- Burgess, A., et al. (2021). Pregnant women's reports of the impact of COVID-19 on pregnancy, prenatal care, and infant feeding plans. *MCN: The American Journal of Maternal/Child Nursing*, 46(1), 21–29. <https://doi.org/10.1097/nmc.0000000000000673>
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Reproductive health resources:

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- Todd-Gher, J., & Shah, P. K. (2020). Abortion in the context of COVID-19: A human rights imperative. *Sexual and Reproductive Health Matters*, 28(1), 1758394. <https://doi.org/10.1080/26410397.2020.1758394>

7. Stress, trauma, and resilience

Unprecedented and extended COVID-19-related upheavals have resulted in widespread increases in stress across multiple domains (e.g., economic, health, career, and caregiving). Local shutdowns and restrictions on large gatherings have limited physical access to social supports, such as religious gatherings, sporting and recreational events, and entertainment (dining out, movies). An analysis of Americans' self-reported COVID-19-related stress and coping confirmed that large majorities of respondents had experienced COVID-19-related stressors.(Park et al., 2020)

Significant gender differences have been identified in pandemic-related stress. Women report more worry about getting sick and losing income than men do, and women report taking more health precautions (including social distancing) than men.(Frederiksen, Gomez, Salganicoff, & Ranji, 2020) The gender gap in self-reported adherence to social distancing measures has widened over the course of the pandemic,(Hamel & Salganicoff, 2020) and gender differences in responses to stress (e.g., higher increases in alcohol use for women than men[Rodriguez, Litt, & Stewart, 2020]) warrant further study. Intersectional analyses will elucidate differences in stress and trauma for members of health disparity populations (including SGM individuals[DiPlacido & CR, 2020; Hatzenbuehler & Pachankis, 2016; Valentine & Shpherd, 2018] and members of underserved racial and ethnic groups[Brown, Mitchell, & Ailshire, 2020; Everett, Steele, Matthews, & Hughes, 2019]), who had higher baseline/pre-pandemic levels of stress exposures and experiences.

Potential research topics:

- Stress exposure, stress response, coping strategies, and resilience, with multidimensional attention to sex, gender, race, ethnicity, age, and caregiving status
- Developing and testing culturally competent strategies to promote resilience, particularly in vulnerable populations
- Developing and testing interventions and prevention strategies to mitigate the impact of COVID-19 on adolescent mental health(Fegert, Vitiello, Plener, & Clemens, 2020)



- Developing and testing strategies for sustainable delivery of evidence-based interventions to improve COVID-19-related stress and emotional trauma outcomes in under-resourced settings
- Developing rapidly deployable, innovative, and effective stress management interventions for health professionals and other essential workers(Albott et al., 2020)
- Developing and testing the feasibility of self-care and adaptive coping digital health interventions, deployable at the county level, during public health emergencies
- Long-term effects of stress related to conflict arising from having multiple roles(Kantamneni, 2020)

Stress, trauma, and resilience resources:

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- Arpacioglu, S., Gurler, M., & Cakiroglu, S. (2020). Secondary traumatization outcomes and associated factors among the health care workers exposed to the COVID-19. *International Journal of Social Psychiatry*, 20764020940742. <https://doi.org/10.1177/0020764020940742>
- Berthelot, N., et al. (2020). Uptrend in distress and psychiatric symptomatology in pregnant women during the coronavirus disease 2019 pandemic. *Acta Obstetrica et Gynecologica Scandinavica*, 99(7), 848–855. <https://doi.org/10.1111/aogs.13925>
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- Brown, L. L., Mitchell, U. A., & Ailshire, J. A. (2020). Disentangling the stress process: Race/ethnic differences in the exposure and appraisal of chronic stressors among older adults. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 75(3), 650–660. <https://doi.org/10.1093/geronb/gby072>
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- Liu, C. H., et al. (2020). Factors associated with depression, anxiety, and PTSD symptomatology during the COVID-19 pandemic: Clinical implications for U.S. young adult mental health. *Psychiatry Research*, 290, 113172. <https://doi.org/10.1016/j.psychres.2020.113172>
- Liu, N., et al. (2020). Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. *Psychiatry Research*, 287, 112921. <https://doi.org/10.1016/j.psychres.2020.112921>



- Moccia, L., et al. (2020). Affective temperament, attachment style, and the psychological impact of the COVID-19 outbreak: An early report on the Italian general population. *Brain, Behavior, and Immunity*, 87, 75–79. <https://doi.org/10.1016/j.bbi.2020.04.048>
- Park, C. L., et al. (2020). Americans' COVID-19 stress, coping, and adherence to CDC guidelines. *Journal of General Internal Medicine*, 35, 2296–2303. <https://doi.org/10.1007/s11606-020-05898-9>
- Rodriguez, L. M., Litt, D. M., & Stewart, S. H. (2020). Drinking to cope with the pandemic: The unique associations of COVID-19-related perceived threat and psychological distress to drinking behaviors in American men and women. *Addictive Behaviors*, 110, 106532. <https://doi.org/10.1016/j.addbeh.2020.106532>
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8. Women in biomedical careers

The effects of COVID-19 on the biomedical research workforce are staggering. The impact is even more devastating for early-career investigators, as the research interruption comes at a period when their productivity is critical to defining the trajectories of their future careers.(Flaherty, 2020; Pain, 2020) In addition to pausing non-COVID-19-related research, many institutions reassigned young scientists holding clinical credentials to undertake COVID-19-related clinical duties. Seeing as women make up the largest proportion of health care providers, many young scientists have been overwhelmed physically and mentally with providing direct care to seriously ill patients while attending to their research goals.(Reynolds, 2020)

Women scientists are further challenged by their additional roles as principal caregivers and homeschooling teachers in their families.(Minello, 2020; Scientists, 2020) With day care facilities and schools closed, many women have been tasked with navigating their own pandemic-related stress alongside homeschooling children and managing children's psychological responses to COVID-19.(Cardel, Dean, & Montoya-Williams, 2020; Coyne et al., 2020) Now more than ever, mentorship is critical. It is particularly important for guiding vulnerable women scientists in underrepresented racial and ethnic groups. Unfortunately, during the pandemic, many mentors are being pulled away for clinical duties and have been unable to provide direly needed support. Though some institutions are paying trainee stipends, others are furloughing fellows. Early-career scientists are especially affected by hiring freezes, which can delay transition to independent research faculty positions.

Potential research topics:

- Development and testing of strategies to retain and support women in biomedical careers
- Long-range effects of COVID-19 on career trajectories of women in biomedical careers

Biomedical careers resources:

500 Women Scientists. (2020, May 7). Scientist mothers face extra challenges in the face of COVID-19. *Scientific American*. <https://blogs.scientificamerican.com/voices/scientist-mothers-face-extra-challenges-in-the-face-of-covid-19>

Weiner, S. (2020, November 12). *How COVID-19 threatens the careers of women in medicine*. Association of American Medical Colleges. <https://www.aamc.org/news-insights/how-covid-19-threatens-careers-women-medicine>



- Armstrong, K. (2021). Covid-19 and the investigator pipeline. *The New England Journal of Medicine*, 385, 7–9. <https://doi.org/10.1056/NEJMp2100086>
- Bernard, M. A., & Lauer, M. (2021, March 25). *The impact of the COVID-19 pandemic on the extramural scientific workforce — Outcomes from an NIH-led survey*. National Institutes of Health. <https://diversity.nih.gov/blog/2021-03-25-impact-covid-19-pandemic-extramural-scientific-workforce-outcomes-nih-led-survey>
- Brooks, M. (2020, October 26). *COVID-19 taking a toll on med students, survey shows*. Medscape. <https://www.medscape.com/viewarticle/939798>
- Buckee, C., et al. (2020, May 15). Women in science are battling both Covid-19 and the patriarchy. *Times Higher Education*. <https://www.timeshighereducation.com/blog/women-science-are-battling-both-covid-19-and-patriarchy>
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- Deryugina, T., Shurchkov, O., & Stearns, J. E. (2021). COVID-19 disruptions disproportionately affect female academics. *National Bureau of Economic Research Working Paper Series, No. 28360*. <https://doi.org/10.3386/w28360>
- COVID is amplifying the inadequacy of research-evaluation processes. (2021, March 3). *Nature*, 591, 7. <https://doi.org/10.1038/d41586-021-00527-9>
- How epidemiology has shaped the COVID pandemic. (2021, January 27). *Nature*, 589, 491–492. <https://doi.org/10.1038/d41586-021-00183-z>
- Flaherty, C. (2020, April 21). No room of one's own. *Inside Higher Ed*. <https://www.insidehighered.com/news/2020/04/21/early-journal-submission-data-suggest-covid-19-tanking-womens-research-productivity>
- Hewings-Martin, Y. (2020, October 11). Males dominate COVID-19 decision making. *Medical News Today*. <https://www.medicalnewstoday.com/articles/males-dominate-covid-19-decision-making>
- National Academies of Sciences, Engineering, and Medicine. (2021). *The impact of COVID-19 on the careers of women in academic sciences, engineering, and medicine*. The National Academies Press. <https://doi.org/10.17226/26061>
- Jones, A. (2021, March 10). Q&A: Unique circumstances for minority scientists during COVID-19. *The Scientist*. <https://www.the-scientist.com/news-opinion/qa-unique-circumstances-for-minority-scientists-during-covid-19-68539>
- Kramer, J. (2020, August 12). Women in science may suffer lasting career damage from COVID-19. *Scientific American*. <https://www.scientificamerican.com/article/women-in-science-may-suffer-lasting-career-damage-from-covid-19>
- Krukowski, R. A., Jagsi, R., & Cardel, M. I. (2021). Academic productivity differences by gender and child age in science, technology, engineering, mathematics, and medicine faculty during the COVID-19 pandemic. *Journal of Women's Health (Larchmont)*, 30(3), 341–347. <https://doi.org/10.1089/jwh.2020.8710>
- Langin, K. (2021, February 9). Pandemic hit academic mothers especially hard, new data confirm. *Science*. <https://doi.org/10.1126/science.caredit.abh0110>
- Malisch, J. L., et al. (2020). Opinion: In the wake of COVID-19, academia needs new solutions to ensure gender equity. *Proceedings of the National Academy of Sciences of the United States of America*, 117(27), 15378–15381. <https://doi.org/10.1073/pnas.2010636117>



- Minello, A. (2020, April 17). The pandemic and the female academic. *Nature*. <https://www.nature.com/articles/d41586-020-01135-9>
- Narayana, S., et al. (2020). Minding the gap: Organizational strategies to promote gender equity in academic medicine during the COVID-19 pandemic. *Journal of General Internal Medicine*, 35(12), 3681–3684. <https://doi.org/10.1007/s11606-020-06269-0>
- Pain, E. (2020, April 17). How early-career scientists are coping with COVID-19 challenges and fears. *Science*. <https://www.sciencemag.org/careers/2020/04/how-early-career-scientists-are-coping-covid-19-challenges-and-fears>
- van Daalen, K. R., et al. (2020). Symptoms of a broken system: The gender gaps in COVID-19 decision-making. *BMJ Global Health*, 5(10). <https://doi.org/10.1136/bmjgh-2020-003549>
- Witteaman, H. O., Haverfield, J., & Tannenbaum, C. (2021). COVID-19 gender policy changes support female scientists and improve research quality. *Proceedings of the National Academy of Sciences of the United States of America*, 118(6), e2023476118. <https://doi.org/10.1073/pnas.2023476118>

9. Essential workforce

Women account for 70% of the global health workforce but, on average, account for only about 25% of COVID-19 task force teams. (Farrar & Gupta, 2020) Essential workers face a complex set of stressors. Frontline health care workers are experiencing high levels of unfavorable mental health symptoms—including depression, anxiety, insomnia, and post-traumatic stress symptoms—and symptom severity is higher in women than men. (Lai et al., 2020; N. Liu et al., 2020) Frontline health care workers are at risk of exposure to SARS-CoV-2 through contact with patients—a risk that increases in the absence of adequate personal protective equipment (PPE).

Increased risk of exposure via low-wage, public-facing essential work (e.g., mass transit and retail) or residence in crowded living spaces disproportionately affects non-White racial and ethnic communities, economically disadvantaged populations, people in geographically isolated areas, and other vulnerable communities (e.g., homeless and incarcerated populations). (Webb Hooper, Nápoles, & Pérez-Stable, 2020) Furthermore, many care workers hold multiple jobs, and risk mitigation plans must account for multiple jobs and unpaid caregiving. (Van Houtven, DePasquale, & Coe, 2020)

Essential workers with children have been in the difficult position of having to go to work while day care facilities and schools have been closed. These workers must also decide whether to limit contact (and, if so, how much) with their households, especially if their households include vulnerable members. Conversely, some essential workers are unable to limit their contact with members of their households, potentially causing stress and increased household exposure risk.

Potential research topics:

- Qualitative and quantitative projects related to work conditions for health care workers
- Designing and piloting PPE that considers diverse bodies of all genders
- Developing and testing rapidly deployable and effective screening tools to identify health professionals at risk for suicide and adverse coping during public health emergencies
- Developing rapidly deployable and effective stress management interventions for health professionals and other essential workers



Essential workforce resources:

- Bayham, J., & Fenichel, E. P. (2020). Impact of school closures for COVID-19 on the US health-care workforce and net mortality: A modelling study. *The Lancet Public Health*, 5(5), e271–e278. [https://doi.org/10.1016/S2468-2667\(20\)30082-7](https://doi.org/10.1016/S2468-2667(20)30082-7)
- Catton, H. (2020). Global challenges in health and health care for nurses and midwives everywhere. *International Nursing Review*, 67(1), 4–6. <https://doi.org/10.1111/inr.12578>
- Khan, S., et al. (2020). Association of COVID-19 with pregnancy outcomes in health-care workers and general women. *Clinical Microbiology and Infection*, 26(6), 788–790. <https://doi.org/10.1016/j.cmi.2020.03.034>
- Lam, S. K. K., Hung, M. S. Y., & Chien, W. T. (2020). Uncertainty surrounding the use of face masks in the community amid the COVID-19 pandemic. *International Journal of Nursing Studies*, 108, 103651. <https://doi.org/10.1016/j.ijnurstu.2020.103651>
- Moody, C. (2020, March 23). *Most brown and Black Americans are exposing themselves to coronavirus for a paycheck*. Vice. https://www.vice.com/en_us/article/xgqpyq/most-brown-and-black-americans-are-exposing-themselves-to-coronavirus-for-a-paycheck
- Tam, P., et al. (2020). *Filipino American nurses are part of an overlooked community hit hard by COVID-19*. ABC News. <https://abcnews.go.com/US/filipino-nurses-part-overlooked-community-hit-hard-covid/story?id=74233831>
- UNAIDS & Global Network of Sex Work Projects. (2020, April 8). *Sex workers must not be left behind in the response to COVID-19*. https://www.unaids.org/sites/default/files/20200408_PS_Sexwork_en.pdf
- Wenham, C., Smith, J., & Morgan, R. (2020). Covid-19 is an opportunity for gender equality within the workplace and at home. *The BMJ*, 369, m1546. <https://doi.org/10.1136/bmj.m1546>
- Yifan, T., et al. (2020). Symptom cluster of ICU nurses treating COVID-19 pneumonia patients in Wuhan, China. *Journal of Pain and Symptom Management*, 60(1), e48–e53. <https://doi.org/10.1016/j.jpainsymman.2020.03.039>

10. Child care and caregiving responsibilities

COVID-19 has made the unpaid labor of family caregivers even more challenging by limiting access to social supports and, for those who are caring for relatives with health needs, adding the responsibility of performing clinical tasks. Women do the lion's share of formal and informal caregiving, both in homes and in the public sphere. (Kantamneni, 2020) With many day care facilities and schools closed or operating on reduced and hybrid schedules, large numbers of women have been navigating the demands of homeschooling children and managing children's psychological responses to COVID-19 while attending to their own pandemic-related stress. (Coyne et al., 2020) Mothers—even those in egalitarian-oriented mixed-gender partnerships—are disproportionately expected to manage household needs while also attending to their professional careers. (King et al., 2020)

Pandemic-related closures limit the availability of supportive services, extending caregiver responsibilities to include medication management, wound care, surrogate financial decision-making, and infectious disease control and prevention functions. (E. Hado & Friss Feinberg, 2020; Edem Hado & Komisar, 2019; Ornstein, Schulz, & Meier, 2017; Reinhard, Feinberg, Houser, Choula, & Evans, 2019) Caregivers also contend with care recipients' heightened anxiety and feelings of isolation related to dramatic disruptions to everyday life. (Lightfoot & Moone, 2020) These factors create dire consequences for the physical and emotional health of caregivers. (Dubey et al., 2020) Prior to the COVID-19 pandemic, nearly one-quarter of family caregivers reported that caregiving contributed to a worsening of their own health. (AARP & National Alliance for Caregiving, 2020) Researchers indicate that caregivers are at even greater risk of physical and mental exhaustion, sleeplessness, and caregiver burnout with the shift



toward more responsibility during the coronavirus emergency.(Dubey et al., 2020; Lightfoot & Moone, 2020; Roman, 2020; Wenham et al., 2020)

Potential research topics:

- Developing community-based interventions to ease the psychological and practical burdens of increased child care responsibilities (e.g., mutual aid programs, family/elder respite care navigation, and mHealth)
- The impact of post-acute sequelae of COVID-19 (PASC) on educational and career trajectories of women and girls
- Developing, deploying, and evaluating community-based health communication initiatives focused on self-care, resilience, and burnout prevention messaging for caregivers
- Developing, testing, and evaluating virtual peer–support group interventions
- The impact of the increased need to multitask on women’s mental health and overall physical health

Child care and caregiving resources:

AARP & National Alliance for Caregiving. (2020, May 14). *Caregiving in the United States 2020*.

<https://www.aarp.org/ppi/info-2020/caregiving-in-the-united-states.html>

Barrett, J. (2020, April 2). How economic fallout from the coronavirus may disproportionately affect women. *Forbes*.

<https://www.forbes.com/sites/jenniferbarrett/2020/04/02/how-economic-fallout-from-the-coronavirus-may-disproportionately-affect-women/#462b6236836a>

Bayham, J., & Fenichel, E. P. (2020). Impact of school closures for COVID-19 on the US health-care workforce and net mortality: A modelling study. *The Lancet Public Health*, 5(5), e271–e278. [https://doi.org/10.1016/S2468-2667\(20\)30082-7](https://doi.org/10.1016/S2468-2667(20)30082-7)

Coyne, L. W., et al. (2020, May 6). First things first: Parent psychological flexibility and self-compassion during COVID-19. *Behavior Analysis in Practice*, 1–7. <https://doi.org/10.1007/s40617-020-00435-w>

Dubey, S., et al. (2020). Psychosocial impact of COVID-19. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(5), 779–788. <https://doi.org/10.1016/j.dsx.2020.05.035>

Hado, E., & Komisar, H. (2019, August). *Long-term services and supports*. AARP Public Policy Institute.

<https://www.aarp.org/content/dam/aarp/ppi/2019/08/long-term-services-and-supports.doi.10.26419-2Fppi.00079.001.pdf>

Hado, E., & Friss Feinberg, L. (2020). Amid the COVID-19 pandemic, meaningful communication between family caregivers and residents of long-term care facilities is imperative. *Journal of Aging & Social Policy*, 32(4–5), 410–415. <https://doi.org/10.1080/08959420.2020.1765684>

Kantamneni, N. (2020). The impact of the COVID-19 pandemic on marginalized populations in the United States: A research agenda. *Journal of Vocational Behavior*, 119, 103439. <https://doi.org/10.1016/j.jvb.2020.103439>

King, T., et al. (2020). Reordering gender systems: Can COVID-19 lead to improved gender equality and health? *The Lancet*, 396(10244), 80–81. [https://doi.org/10.1016/S0140-6736\(20\)31418-5](https://doi.org/10.1016/S0140-6736(20)31418-5)

Lightfoot, E., & Moone, R. P. (2020). Caregiving in times of uncertainty: Helping adult children of aging parents find support during the COVID-19 outbreak. *Journal of Gerontological Social Work*, 63(6–7), 542–552. <https://doi.org/10.1080/01634372.2020.1769793>

Ornstein, K. A., Schulz, R., & Meier, D. E. (2017). Families caring for an aging America need palliative care. *Journal of the American Geriatrics Society*, 65(4), 877–878. <https://doi.org/10.1111/jgs.14785>

Padala, P. R., et al. (2020). Participant and caregiver perspectives on clinical research during Covid-19 pandemic. *Journal of the American Geriatrics Society*, 68(6), E14–E18. <https://doi.org/10.1111/jgs.16500>



- Reinhard, S., et al. (2019, November 14). *Valuing the Invaluable 2019 update: Charting a path forward*. AARP Public Policy Institute. <https://www.aarp.org/ppi/info-2015/valuing-the-invaluable-2015-update.html>
- Roman, C., & Snyder, R. (2020, June 2). *Supporting family caregivers in the time of COVID-19: State strategies*. Center for Health Care Strategies. <https://www.chcs.org/supporting-family-caregivers-in-the-time-of-covid-19-state-strategies>
- Wang, G., et al. (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. *The Lancet*, 395(10228), 945–947. [https://doi.org/10.1016/S0140-6736\(20\)30547-X](https://doi.org/10.1016/S0140-6736(20)30547-X)
- Wenham, C., et al. (2020). COVID-19: The gendered impacts of the outbreak. *The Lancet*, 395(10227), 846–848. [https://doi.org/10.1016/S0140-6736\(20\)30526-2](https://doi.org/10.1016/S0140-6736(20)30526-2)

11. Rural women

Rural communities report higher rates of substance use, obesity, and other comorbid conditions known to increase risk of poor COVID-19 outcomes (Kaufman, Whitaker, Pink, & Holmes, 2020). Structural factors such as high rates of poverty and premature death, geographic isolation, and limited infrastructure affect rural health systems' ability to care for their communities. (Henning-Smith, Hernandez, Hardeman, Ramirez, & Kozhimannil, 2019; Lauckner & Hutchinson, 2016; Snell-Rood, Staton, & Kheibari, 2019; Zahnd, 2020) Diverse populations of rural women—including veterans, (Ingelse & Messecar, 2016) women of color, (Zahnd, 2020) immigrants, (Greder & Reina, 2019) caregivers, (Bristow, Jackson, Shields, & Usher, 2018) and LGBTQ+ individuals (Price-Feeney, Ybarra, & Mitchell, 2019)—face additional factors that can exacerbate these health disparities. The absolute number of COVID-19 cases has been lower in many rural areas than in urban areas, but many rural areas have experienced disproportionately high per capita rates of death. (Huang et al., 2021) Many rural hospitals lack the infrastructure, funds, and institutional connections to conduct COVID-19 clinical trials and attain experimental and expanded-access medications. (Dandachi et al., 2020) Rural mothers and pregnant women, as well as rural caregivers, must navigate an additional set of concerns, including lack of proximity to health facilities, increased reliance on telemedicine, loss of social support because of stay-at-home orders, and overburdened health systems. (Gausman & Langer, 2020) Pursuing COVID-19 research questions relevant to rural women can ensure that this population's health needs are adequately considered.

Potential research topics:

- The role of rural context (geographic isolation, longer distance to care, higher poverty, higher elderly population, weather-related challenges, clinician and behavioral health provider shortages) in COVID-19 outcomes and experiences
- Barriers and facilitators to engagement of rural communities in studies and trials
- Capacity building for rural communities (e.g., using mobile diagnostics and treatment units in studies and trials conducted in rural settings)
- The role of community-based efforts on COVID-19 education, health communication, and behavioral change
- The impact of less access to approved technologies, social media, and public health announcements to increase knowledge and understanding of COVID-19 and the spread in rural communities



Rural women and COVID-19 resources:

- Bristow, S., et al. (2018). The rural mother's experience of caring for a child with a chronic health condition: An integrative review. *Journal of Clinical Nursing*, 27(13–14), 2558–2568. <https://doi.org/10.1111/jocn.14360>
- Dandachi, D., et al. (2021). Treating COVID-19 in rural America. *The Journal of Rural Health*, 37(1), 205–206. <https://doi.org/10.1111/jrh.12457>
- Fehr, R., et al. (2020, April 30). *COVID-19 in rural America – Is there cause for concern?* Kaiser Family Foundation. <https://www.kff.org/coronavirus-covid-19/issue-brief/covid-19-in-rural-america-is-there-cause-for-concern>
- Greder, K., & Reina, A. S. (2019). Procuring health: Experiences of Mexican immigrant women in rural Midwestern communities. *Qualitative Health Research*, 29(9), 1334–1344. <https://doi.org/10.1177/1049732318816676>
- Henning-Smith, C. E., et al. (2019). Rural counties with majority Black or Indigenous populations suffer the highest rates of premature death in the US. *Health Affairs*, 38(12), 2019–2026. <https://doi.org/10.1377/hlthaff.2019.00847>
- Huang, Q., et al. (2021). Urban-rural differences in COVID-19 exposures and outcomes in the South: A preliminary analysis of South Carolina. *PLOS One*, 16(2), e0246548. <https://doi.org/10.1371/journal.pone.0246548>
- Ingelse, K., & Messecar, D. (2016). Rural women veterans' use and perception of mental health services. *Archives of Psychiatric Nursing*, 30(2), 244–248. <https://doi.org/10.1016/j.apnu.2015.11.008>
- Kaufman, B. G., et al. (2020). Half of rural residents at high risk of serious illness due to COVID-19, creating stress on rural hospitals. *The Journal of Rural Health*, 36(4), 584–590. <https://doi.org/10.1111/jrh.12481>
- Lauckner, H. M., & Hutchinson, S. L. (2016). Peer support for people with chronic conditions in rural areas: A scoping review. *Rural and Remote Health*, 16(1), 3601. <https://pdfs.semanticscholar.org/0ac1/aecf903672fefba653cbe8dc16c206f94c48.pdf>
- Moreau, J. L., et al. (2018). The use of telemental health to meet the mental health needs of women using Department of Veterans Affairs services. *Women's Health Issues*, 28(2), 181–187. <https://doi.org/10.1016/j.whi.2017.12.005>
- Olusola, P., et al. (2019). Cervical cancer prevention in racially disparate rural populations. *Medicines (Basel)*, 6(3). <https://doi.org/10.3390/medicines6030093>
- Patel, L., et al. (2021). Ethical and legal challenges during the COVID-19 pandemic: Are we thinking about rural hospitals? *The Journal of Rural Health*, 37(1), 175–178. <https://doi.org/10.1111/jrh.12447>
- Snell-Rood, C., Staton, M., & Kheibari, A. (2019). Rural women's first-person perspectives on the role of mental health in substance use. *Rural and Remote Health*, 19(4), 5279. <https://doi.org/10.22605/rrh5279>
- Souch, J. M., & Cossman, J. S. (2021). A commentary on rural-urban disparities in COVID-19 testing rates per 100,000 and risk factors. *The Journal of Rural Health*, 37(1), 188–190. <https://doi.org/10.1111/jrh.12450>
- Zahnd, W. E. (2021). The COVID-19 pandemic illuminates persistent and emerging disparities among rural Black populations. *The Journal of Rural Health*, 37(1), 215–216. <https://doi.org/10.1111/jrh.12460>

12. Incarcerated women

Women are the fastest-growing proportion of the incarcerated population in the United States, with disproportionate numbers of women and girls of color, transgender women, and women experiencing poverty facing a higher lifetime chance of justice system involvement. (Cowan, 2019; Reisner, Bailey, & Sevelius, 2014) The characteristics of corrections settings (close quarters, crowding/overcrowding, supply shortages) have important implications for COVID-19. (Hagan et al., 2020; Nelson & Kaminsky, 2020) Confinement poses health risks such as stress and interruptions to medical treatment and care, mental health services, and addiction recovery services. (Barnert, Ahalt, & Williams, 2020; E. Mollard & Brage Hudson, 2016) Physical and mental health conditions are more common in people of all genders who have a history of incarceration than they are among the general population; however, women with



a history of incarceration bear the greatest burden of disease—including conditions that are infectious, such as tuberculosis, hepatitis, and HIV—as well as conditions such as high blood pressure. Despite women's greater burden and having unique needs—e.g., feminine hygiene products, gynecological services, and prenatal care for pregnant detainees—correctional health professionals may not have as much capacity to meet health care utilization demands for incarcerated women as they have for incarcerated men.(Nowotny, 2016)

Across the United States, jails, prisons, and detention centers have reported outbreaks of COVID-19, with a dramatic impact on local prevalence rates in at least one jurisdiction (Cook County, Illinois).(Reinhart & Chen, 2020) In the age of COVID-19, already-stretched prison health care and mental health services may be challenged even further.(Kinner, 2020) Data collection, reporting, and disaggregation by sex, race, and ethnicity is sorely lacking, limiting our understanding of the extent of COVID-19's impact in carceral settings(Jiménez et al., 2020). A comprehensive response to COVID-19 must attend to—and create structures to provide for—the health, resilience, and safety of diverse incarcerated populations.(Kinner et al., 2020)

Potential research topics:

- COVID-19 prevalence and outcomes in incarcerated populations and correctional workers
- How State policies and initiatives mitigate or exacerbate disparities in health services use and health outcomes in health disparity and other vulnerable populations
- Attitudes and health literacy about COVID-19 among incarcerated and recently released populations

Incarceration resources:

- Akiyama, M. J., Spaulding, A. C., & Rich, J. D. (2020). Flattening the curve for incarcerated populations — Covid-19 in jails and prisons. *The New England Journal of Medicine*, 382(22), 2075–2077. <https://doi.org/10.1056/NEJMp2005687>
- Barnert, E., Ahalt, C., & Williams, B. (2020). Prisons: Amplifiers of the COVID-19 pandemic hiding in plain sight. *American Journal of Public Health*, 110(7), 964–966. <https://doi.org/10.2105/ajph.2020.305713>
- National Research Council. (2014). *The growth of incarceration in the United States: Exploring causes and consequences*. The National Academies Press. <https://doi.org/10.17226/18613>
- Cowan, B. A. (2019, April). Incarcerated women: Poverty, trauma and unmet need. *The SES Indicator*. <https://www.apa.org/pi/ses/resources/indicator/2019/04/incarcerated-women>
- Dietz, L., et al. (2020). 2019 novel coronavirus (COVID-19) pandemic: Built environment considerations to reduce transmission. *mSystems*, 5(2). <https://doi.org/10.1128/mSystems.00245-20>
- Gajanan, M. (2020, April 29). Federal inmate dies of coronavirus after giving birth while on ventilator. *Time*. <https://time.com/5829082/female-inmate-covid-19-birth-ventilator>
- Hagan, L. M., et al. (2020). Mass testing for SARS-CoV-2 in 16 prisons and jails — Six jurisdictions, United States, April–May 2020. *Morbidity and Mortality Weekly Report*, 69(33), 1139–1143. <https://doi.org/10.15585/mmwr.mm6933a3>
- Harner, H. M., & Riley, S. (2013). The impact of incarceration on women's mental health: Responses from women in a maximum-security prison. *Qualitative Health Research*, 23(1), 26–42. <https://doi.org/10.1177/1049732312461452>
- Hewson, T., et al. (2020). Effects of the COVID-19 pandemic on the mental health of prisoners. *The Lancet Psychiatry*, 7(7), 568–570. [https://doi.org/10.1016/S2215-0366\(20\)30241-8](https://doi.org/10.1016/S2215-0366(20)30241-8)



- Huang, Q., et al. (2021). Urban-rural differences in COVID-19 exposures and outcomes in the South: A preliminary analysis of South Carolina. *PLOS One*, 16(2), e0246548. <https://doi.org/10.1371/journal.pone.0246548>
- Jiménez, M. C., et al. (2020). Epidemiology of COVID-19 among incarcerated individuals and staff in Massachusetts jails and prisons. *JAMA Network Open*, 3(8), e2018851. <https://doi.org/10.1001/jamanetworkopen.2020.18851>
- Kajstura, A. (2017, October 19). *Women's mass incarceration: The whole pie*. Prison Policy Initiative & American Civil Liberties Union Campaign for Smart Justice. <https://www.aclu.org/report/womens-mass-incarceration-whole-pie-2017>
- Kinner, S. A., et al. (2020). Prisons and custodial settings are part of a comprehensive response to COVID-19. *The Lancet Public Health*, 5(4), e188–e189. [https://doi.org/10.1016/S2468-2667\(20\)30058-X](https://doi.org/10.1016/S2468-2667(20)30058-X)
- Macmadu, A., & Rich, J. D. (2015). Correctional health is community health. *Issues in Science and Technology*, 32(1). <https://issues.org/correctional-health-care-community-health-prisons-jails>
- Mollard, E., & Brage Hudson, D. (2016). Nurse-led trauma-informed correctional care for women. *Perspectives in Psychiatric Care*, 52(3), 224–230. <https://doi.org/10.1111/ppc.12122>
- Nowotny, K. M. (2016). Social factors related to the utilization of health care among prison inmates. *Journal of Correctional Health Care*, 22(2), 129–138. <https://doi.org/10.1177/1078345816633701>
- Nowotny, K. M. (2017). Health care needs and service use among male prison inmates in the United States: A multi-level behavioral model of prison health service utilization. *Health Justice*, 5(1), 9. <https://doi.org/10.1186/s40352-017-0052-3>
- Oladeru, O. T., Beckman, A., & Gonsalves, G. (2020, March 10). What COVID-19 means for America's incarcerated population — and how to ensure it's not left behind. *Health Affairs*. <https://www.healthaffairs.org/doi/10.1377/hblog20200310.290180/full>
- Ramaswamy, M., et al. (2020). Criminal justice-involved women navigate COVID-19: Notes from the field. *Health Education & Behavior*, 47(4), 544–548. <https://doi.org/10.1177/1090198120927304>
- Reinhart, E., & Chen, D. L. (2020). Incarceration and its disseminations: COVID-19 pandemic lessons from Chicago's Cook County Jail. *Health Affairs*, 39(8), 1412–1418. <https://doi.org/10.1377/hlthaff.2020.00652>
- Reisner, S. L., Bailey, Z., & Sevelius, J. (2014). Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the U.S. *Women & Health*, 54(8), 750–767. <https://doi.org/10.1080/03630242.2014.932891>
- Yang, H., & Thompson, J. R. (2020). Fighting covid-19 outbreaks in prisons. *The BMJ*, 369, m1362. <https://doi.org/10.1136/bmj.m1362>

13. Women experiencing homelessness or housing instability

In 2019, more than a half-million people experienced homelessness in the United States; close to 39% of that population was female, and 1% was transgender or gender-nonconforming. (National Alliance to End Homelessness) Underserved racial and ethnic groups are overrepresented among those experiencing homelessness. (National Alliance to End Homelessness; U.S. Census Bureau, 2019) Women who have children and are members of underserved ethnic groups make up the fastest-growing segment of the homeless population, (Moses, 2019) and more than 40% of Black and Hispanic individuals experiencing homelessness are part of families.

Women experiencing homelessness face high levels of health disparities, including higher risk of illness, lower health status, injury/victimization (e.g., sexual violence), poor birth outcomes, and higher rates of mortality (e.g., deaths attributable to intimate partner violence). (National Center on Family Homelessness, 2008) Women experiencing homelessness because of domestic violence face additional vulnerabilities and safety concerns. (Goodsmith, Ijadi-Maghssoodi, Melendez, & Dossett, 2021)



COVID-19 prevention and mitigation measures—such as social distancing, frequent handwashing, and self-isolation—are difficult or impossible to implement for individuals experiencing homelessness. The demographics of the U.S. homeless population, coupled with the unique health risks posed by homelessness, create a situation of precarity for individuals experiencing homelessness or housing insecurity during the COVID-19 pandemic.

Potential research topics:

- The feasibility of community-based rapid rehousing interventions during public health emergencies
- Strategies to safeguard subsidized housing/service-intensive living environment initiatives during public health emergencies
- Developing and testing field tools for real-time assessment of public health emergency–related psychosocial stress among populations experiencing housing instability
- The feasibility of rapidly deployable training related to stress and adaptive coping skills for unstably housed populations

Homelessness resources:

- Albon, D., Soper, M., & Haro, A. (2020). Potential implications of the COVID-19 pandemic on the homeless population. *Chest*, 158(2), 477–478. <https://doi.org/10.1016/j.chest.2020.03.057>
- Baggett, T. P., et al. (2020). Prevalence of SARS-CoV-2 infection in residents of a large homeless shelter in Boston. *JAMA*, 323(21), 2191–2192. <https://doi.org/10.1001/jama.2020.6887>
- Baggett, T. P., et al. (2010). The unmet health care needs of homeless adults: A national study. *American Journal of Public Health*, 100(7), 1326–1333. <https://doi.org/10.2105/AJPH.2009.180109>
- Brown, R. T., et al. (2016). Pathways to homelessness among older homeless adults: Results from the HOPE HOME study. *PLOS One*, 11(5), e0155065. <https://doi.org/10.1371/journal.pone.0155065>
- Culhane, D. P., et al. (2013). The age structure of contemporary homelessness: Evidence and implications for public policy. *Analyses of Social Issues and Public Policy*, 13(1), 228–244. <https://doi.org/10.1111/asap.12004>
- Cumming, C., Wood, L., & Davies, A. (2021). People experiencing homelessness urgently need to be recognised as a high risk group for COVID-19. *Health Promotion Journal of Australia*, 32(2), 359–360. <https://doi.org/10.1002/hpja.355>
- Goodsmith, N., et al. (2021). Addressing the urgent housing needs of vulnerable women in the era of COVID-19: The Los Angeles County experience. *Psychiatric Services*, 72(3), 349–352. <https://doi.org/10.1176/appi.ps.202000318>
- Kirby, T. (2020). Efforts escalate to protect homeless people from COVID-19 in UK. *The Lancet Respiratory Medicine*, 8(5), 447–449. [https://doi.org/10.1016/S2213-2600\(20\)30160-0](https://doi.org/10.1016/S2213-2600(20)30160-0)
- Lima, N. N. R., et al. (2020). People experiencing homelessness: Their potential exposure to COVID-19. *Psychiatry Research*, 288, 112945. <https://doi.org/10.1016/j.psychres.2020.112945>
- Maremmani, A. G., et al. (2017). Substance use among homeless individuals with schizophrenia and bipolar disorder. *The Journal of Nervous and Mental Disease*, 205(3), 173–177. <https://doi.org/10.1097/NMD.0000000000000462>
- Moses, J. (2019). *Demographic Data Project: Race, ethnicity, and homelessness*. Homelessness Research Institute. <https://endhomelessness.org/wp-content/uploads/2019/07/3rd-Demo-Brief-Race.pdf>
- Mosites, E., et al. (2020). Assessment of SARS-CoV-2 infection prevalence in homeless shelters — Four U.S. cities, March 27–April 15, 2020. *Morbidity and Mortality Weekly Report*, 69(17), 521–522. <https://doi.org/10.15585/mmwr.mm6917e1>



- National Alliance to End Homelessness, et al. (2020, October 19). *The Framework for an Equitable COVID-19 Homelessness Response*. <https://endhomelessness.org/wp-content/uploads/2020/04/COVID-Framework-4.29.2020-1.pdf>
- National Alliance to End Homelessness. (2020). *State of Homelessness: 2020 edition*. <https://endhomelessness.org/homelessness-in-america/homelessness-statistics/state-of-homelessness-2020>
- National Center on Family Homelessness. (2008). *The characteristics and needs of families experiencing homelessness*. <https://files.eric.ed.gov/fulltext/ED535499.pdf>
- National Coalition for the Homeless. (2009, July). *Why are people homeless?* <https://www.nationalhomeless.org/factsheets/why.html>
- Neto, M. L. R., et al. (2020). When basic supplies are missing, what to do? Specific demands of the local street population in times of coronavirus — a concern of social psychiatry. *Psychiatry Research*, 288, 112939. <https://doi.org/10.1016/j.psychres.2020.112939>
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14. Stigma and bias

Social stigma, bias, and discrimination can damage the physical health and emotional wellness of vulnerable groups (e.g., LGBTQ+, Asian American, African American, American Indian, Latinx, and Muslim populations). Previous epidemics have been accompanied by increases in stigma and bias for communities perceived to be linked to the epidemic. For example, LGBTQ+ individuals and Haitian immigrants experienced increased stigma and bias early in the HIV epidemic,(Mahajan et al., 2008) and Latinx farmworkers reported heightened stigma during the 2009 H1N1 outbreak.(Schoch-Spana, Bouri, Rambhia, & Norwood, 2010) Also, Chinese Americans have faced stigma and bias during COVID-19.(M. Liu, 2020)

Some early reports on COVID-19 used stigmatizing language (e.g., referring to COVID-19 as the Chinese virus), engendering bias against people thought to be of Chinese descent. As more COVID-19 health communication campaigns are developed and deployed, it will be important to avoid stigmatizing language and combat misinformation. A critical lesson from the HIV response is that stigma manifests differently in different contexts and settings and may affect certain groups in ways that make testing, care, and disease management difficult. COVID-19 prevention, control, diagnostic, treatment, and vaccine responses must adopt intentional, thoughtful, effective, and practical measures (i.e., include the use of non-stigmatizing terminology and limit punitive and exclusionary policies and laws) that emphasize health education to improve knowledge, prioritize inclusion and human rights, and prevent dangerous behaviors and attitudes.



Potential research topics:

- Experiences of stigma
- The effects of bias and stigma on access to, treatment with, and outcomes of COVID-19 diagnostics
- Infectious disease–related stigma’s effects on public health policies and the design and uptake of services during emergencies
- Development and testing of interventions to mitigate stigma and implicit bias in COVID-19 care settings
- Organizational and health care facilities’ policies and procedures that perpetuate stigma and biases

Stigma resources:

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- Jenkins, W. D., et al. (2021). COVID-19 during the opioid epidemic — Exacerbation of stigma and vulnerabilities. *The Journal of Rural Health*, 37(1), 172–174. <https://doi.org/10.1111/jrh.12442>
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